

A STUDY ON RISK-RETURN ANALYSIS OF PUBLIC AND PRIVATE SECTOR BANKS LISTED IN BSE BANKEX

Submitted in partial fulfillment of the requirements for the award of

Master of Business Administration

by

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SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119**

APIRL - 2021



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of Ms. Ani Angel (39410014) who carried out the project entitled **“A Study on Risk-Return Analysis of Public and Private Sector Banks Listed in BSE BANKEX”** under my supervision from December 2020 to March 2021.

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DECLARATION

I **ANI ANGEL L 39410014** hereby declare that the Project Report entitled “**A Study on Risk-Return Analysis on Public and Private Sector Banks Listed in BSE BANKEX**” done by me under the guidance of Dr.Velumoni M.B.A., M.Phil., **Ph.D.**, is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

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ABSTRACT

A Banking sector is the backbone of the country's economy and this sector has contributed good returns for the investor in the past. Risk and Return analysis play a very important role in an individual decision-making process. This paper analyzes the risk and return of Public and Private sector banks. The study compares the performance of the 10 listed banks in the BSE from January 2016 to December 2020. As from the data collected and calculated HDFC Bank -Private sector bank gives the highest returns of 22.41% and PNB – Public sector bank gives the negative returns of -22.76%. Risk is higher in case of PNB - Public sector bank i.e 5.18% and lower in case of Axis Bank- Private sector bank i.e 0.35%. From Regression Analysis it is found that only ICIC and Axis bank has a significant relationship between Risk and Returns and rest of the banks has no significant relationship between Risk and Return. In Correlation Analysis 7 banks are positively correlated apart from Canara, Punjab national bank and Bank of Baroda are negatively correlated. Risk is a concept that indicates a negative impact on an asset or some characteristic of value that may result from some present process or future event. The study evaluates the performance of banking mainly to identify the required rate of return and risk-based upon different risk elements prevailing in the market and other economic factors.

Keywords: Return, Risk, Banking sector, BSE Bankex

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CHAPTER 1

INTRODUCTION

Banks play a very important role in building the economy of an individual as well as nation. In India banking sector forms the lifeline of economic activity for both rural and urban areas. So any changes in stock price of banks will be definitely affect the investment pattern of investor and also affects the economy. Indian banking industry, the backbone of the country's economy, has always played a positive key role in prevention the economic disaster from reaching horrible volume in the country. Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. It has achieved enormous appreciation for its strength, particularly in the wake of the latest worldwide economic disasters, which pressed its worldwide counterparts to the edge of fall down. The Equity market in India is extremely volatile. Equity Markets across the world are volatile but India has a higher level of volatility. Stock market risk is the tendency of stock prices to decrease due to the change in value of the market risk factors. Value of units or shares is directly related to the market value of those investments held by the stock market. Though banking and financial services sector funds have accelerated on generating superior risk adjusted returns until now, they suffer from the risk of portfolio concentration as a single stock accounts for equity portfolio in some gear. The market value of those investments will go up and down depending on the financial performance of the issuers and general economic, political, tax and market conditions. Standard market risk factors are stock prices, interest rates, foreign exchange rates, and commodity prices.

Higher risk is associated with greater probability of higher return and lower risk with a greater probability of smaller return. If decisions are to be lead benefit maximization, it is

necessary that individuals/institutions consider the combined influence on expected return or benefit as well as on risk. The return is the gain or loss of a security in a particular period, return includes interest, dividend and capital appreciation. Simple meaning of risk is probability of loss. It implies future uncertainty about deviation from expected earnings or expected outcome. Risk is the chance or probability for a certain investment may or may not deliver the actual/expected returns.

The risk and return trade off says that the potential return rises with an increase in risk, low level of uncertainty are associated with low potential return. To know relationship between risk and return may be main topic of any investor because investor is always interest to get high return at low risk, but if he succeeds to qualify the relationship and its direction, he can manage his investment with better way.

1.1 FINANCIAL MARKETS

Financial markets are another part or component of financial system. Efficient financial markets are essential for speedy economic development. The vibrant financial market enhances the efficiency of capital formation. It facilitates the flow of savings into investment. Financial markets bridge one set of financial intermediaries with another set of players. Financial markets are the backbone of the economy. This is because they provide monetary support for the growth of the economy. The growth of the financial markets is the barometer of the growth of a country's economy.

Financial markets exist wherever financial transactions take place. Financial transactions include issue of equity stock by a company, purchase of bonds in the secondary market, deposit of money in a bank account, transfer of funds from a current account to a savings account etc. The participants in the financial markets are corporations, financial

institutions, individuals and the government. These participants trade in financial products in these markets. They trade either directly or through brokers and dealers. In short, financial markets are markets that deal in financial assets and credit instruments.

On this basis, financial markets may be classified into money market and capital market.

1.1.1 MONEY MARKET

Money market is a segment of financial market. It is a market for short term funds. It deals with all transactions in short term securities. These transactions have a maturity period of one year or less. Examples are bills of exchange, treasury bills etc. These short term instruments can be converted into money at low transaction cost and without much loss. Thus, money market is a market for short term financial securities that are equal to money.

According to Crowther, “Money market is a collective name given to various firms and institutions that deal in the various grades of near moneyll. Money market is not a place. It is an activity. It includes all organizations and institutions that deal in short term financial instruments. However, sometimes geographical names are given to the money market according to the location, e.g. Mumbai Money Market.

Functions of Money Markets:

Money market performs the following functions:

1. Facilitating adjustment of liquidity position of commercial banks, business undertakings and other non-banking financial institutions.

2. Enabling the central bank to influence and regulate liquidity in the economy through its intervention in the market.
3. Providing a reasonable access to users of short term funds to meet their requirements quickly at reasonable costs.
4. Providing short term funds to govt. institutions.
5. Enabling businessmen to invest their temporary surplus funds for short period.
6. Facilitating flow of funds to the most important uses.
7. Serving as a coordinator between borrowers and lender of short term funds.
8. Helping in promoting liquidity and safety of financial assets.

1.1.2 CAPITAL MARKET

Capital market simply refers to a market for long term funds. It is a market for buying and selling of equity, debt and other securities. Generally, it deals with long term securities that have a maturity period of above one year. Capital market is a vehicle through which long term finance is channelized for the various needs of industry, commerce, govt. and local authorities.

According to W.H. Husband and J.C. Dockerbay, —the capital market is used to designate activities in long term credit, which is characterized mainly by securities of investment type.

Thus, capital market may be defined as an organized mechanism for the effective and smooth transfer of money capital or financial resources from the investors to the entrepreneurs.

Functions of Capital Market:

The functions of an efficient capital market are as follows:

1. Mobilize long term savings for financing long term investments.
2. Provide risk capital in the form of equity or quasi-equity to entrepreneurs.
3. Provide liquidity with a mechanism enabling the investor to sell financial assets.
4. Improve the efficiency of capital allocation through a competitive pricing mechanism.
5. Disseminate information efficiently for enabling participants to develop an informed opinion about investment, disinvestment, reinvestment etc.
6. Enable quick valuation of instruments – both equity and debt.
7. Provide insurance against market risk through derivative trading and default risk through investment protection fund.
8. Provide operational efficiency through: (a) simplified transaction procedures, (b) lowering settlement times, and (c) lowering transaction costs.

The capital market is divided into two segments:

A. Primary Market:

The primary market is a market for new issues. It is also called new issue market. It is a market for fresh capital. It deals with the new securities which were not previously

available to the investing public. Corporate enterprises and Govt. raises long term funds from the primary market by issuing financial securities.

Both the new companies and the existing companies can issue new securities on the primary market. It also covers raising of fresh capital by government or its agencies. The primary market comprises of all institutions dealing in fresh securities. These securities may be in the form of equity shares, preference shares, debentures, right issues, deposits etc.

B. SECONDARY MARKET:

Secondary market is a market for old issues. It deals with the buying and selling existing securities i.e. securities already issued. In other words, securities already issued in the primary market are traded in the secondary market. Secondary market is also known as stock market. The secondary market operates through stock exchanges.

In the secondary market, the existing owner sells securities to another party. The secondary markets support the primary markets. The secondary market provides liquidity to the individuals who acquired these securities. The primary market gets benefits greatly from the liquidity provided by the secondary market. This is because investors would hesitate to buy the securities in the primary market if they thought they could not sell them in the secondary market later.

In India, stock market consists of recognized stock exchanges. In the stock exchanges, securities issued by the central and state governments, public bodies, and joint stock companies are traded.

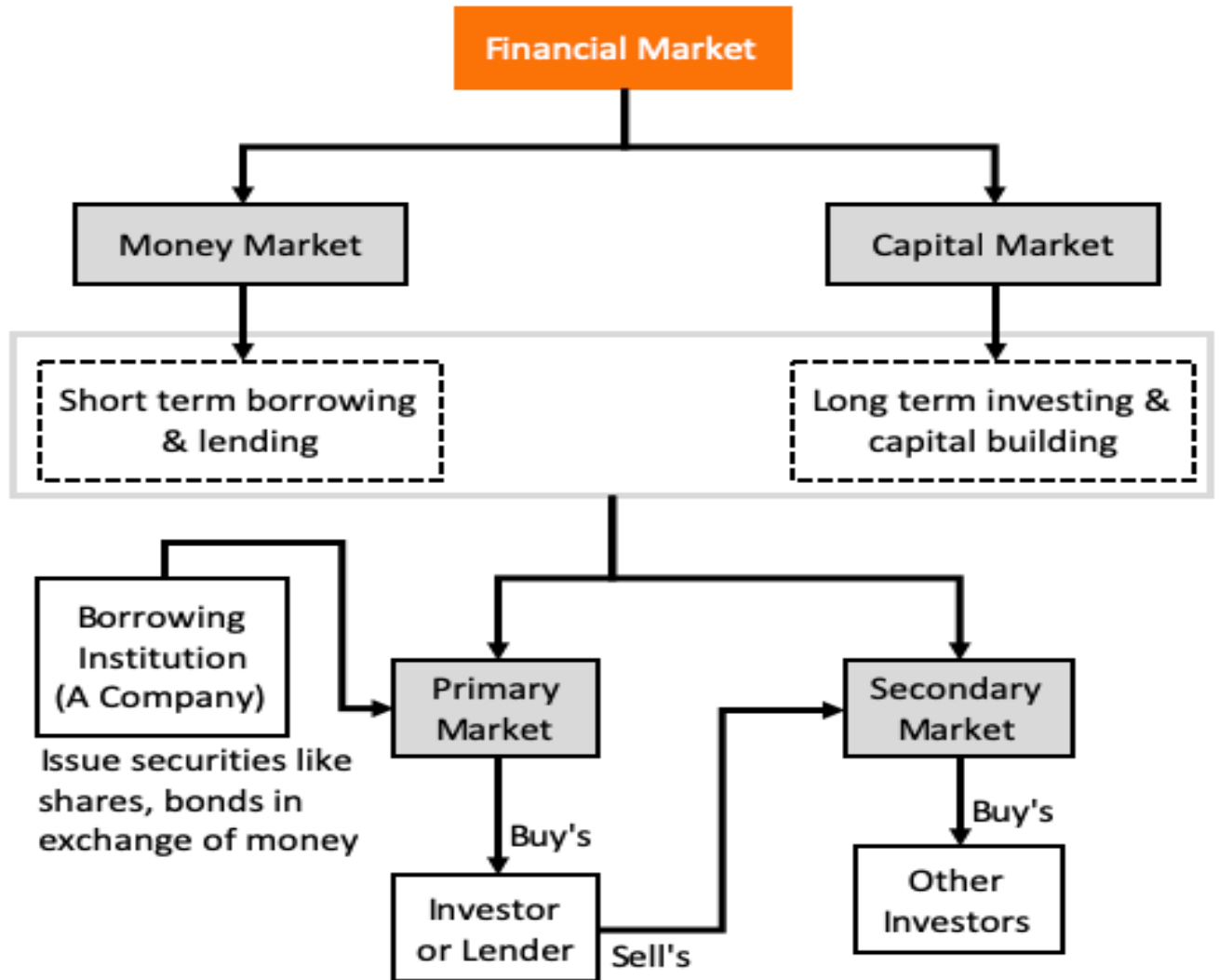


Chart 1.1 Types of Financial Markets

1.1.3 INDIAN STOCK MARKET

Come to the Indian stock market, Indian stock market is one of the oldest In Asia. Its history dates back to nearly 200 years ago. The earliest records of security dealings in India are major and obscure. The east India Company was the dominant institution in those days and business in its loan securities used to be transacted towards the close of

the 80th century. The Indian market has been assigned an imported placing financing the Indian corporate sector.

Rising share prices, for instance, tend to be associated with increased business investment and vice versa. Share prices also affect the wealth of households and their consumption. Therefore, central banks tend to keep an eye on the control and behavior of the stock market and, in general, on the smooth operation of financial system functions. Exchanges also act as the clearinghouse for each transaction, meaning that they collect and deliver the shares, and guarantee payment to the seller of a security. This eliminates the risk to an individual buyer or seller that the counterparty could default on the transaction.

➤ ***Bombay Stock Exchange (BSE)***

Indian stock market happens to be one of the oldest stock market in Asia. It dates back to the 18th century when the East India Company used to transact loan securities. In the 1830s, trading on corporate stocks and shares in Bank and Cotton presses began in Bombay. Though the trading was broad but the brokers were hardly half a dozen during 1840 and 1850.

It is the first Stock Exchange in the Country to have obtained permanent recognition in 1956 from the Govt. of India under the Securities Contracts (Regulation) Act, 1956. The main index of BSE is called BSE SENSEX or simply SENSEX. It comprises of 30 financially sound company stocks, which are liable to be reviewed and modified from time-to-time. It also strives to educate and enlighten the investors by conducting investor education programmes and providing them with the necessary informative inputs. A Governing Board having 20 directors is the apex body, which decides the policies and regulates the affairs of the Exchange.

➤ **BSE Sensex**

S&P BSE SENSEX, first compiled in 1986, was calculated on a "Market Capitalization-Weighted" methodology of 30 component stocks representing large, well-established and financially sound companies across key sectors. The base year of S&P BSE SENSEX was taken as 1978-79. S&P BSE SENSEX today is widely reported in both domestic and international markets through print as well as electronic media. It is scientifically designed and is based on globally accepted construction and review methodology. Since September 1, 2003, S&P BSE SENSEX is being calculated on a free-float market capitalization methodology. The "free-float market capitalization-weighted" methodology is a widely followed index construction methodology on which majority of global equity indices are based; all major index providers like MSCI, FTSE, STOXX, and Dow Jones use the free-float methodology.

The growth of the equity market in India has been phenomenal in the present decade. Right from early nineties, the market witnessed heightened activity in terms of various bull and bear runs. In the late nineties, the Indian market witnessed a huge frenzy in the 'TMT' sectors. More recently, real estate caught the fancy of the investors. S&P BSE SENSEX has captured all these happenings in the most judicious manner. One can identify the booms and busts of the Indian equity market through S&P BSE SENSEX. As the oldest index in the country, it provides the time series data over a fairly long period of time (from 1979 onwards). Small wonder, the S&P BSE SENSEX has become one of the most prominent brands in the country.

➤ ***National Stock Exchange (NSE)***

National Stock Exchange of India Limited (NSE) is the leading stock exchange of India, located in Mumbai. The NSE was established in 1992 as the first demutualized electronic exchange in the country. NSE was the first exchange in the country to provide a modern, fully automated screen-based electronic trading system which offered easy trading facility to the investors spread across the length and breadth of the country. Vikram Limaye is Managing Director & Chief Executive Officer (MD & CEO) of NSE.

➤ ***MCX Stock Exchange***

Multi Commodity Exchange of India Ltd (MCX) (BSE: 534091) is an independent commodity exchange based in India. It was established in 2003 and is based in Mumbai. The stock exchange is demutualized and recognized by Securities and Exchange Board of India under section of 4 of securities contract (Regulation) Act 1956. It has separate Clearing Corporation called MCX-SX Clearing Corporation Ltd (MCX-SX CCL). Multi Commodity Exchange of India Ltd (MCX) (BSE: 534091) is an independent commodity exchange based in India. It was established in 2003 and is based in Mumbai. It is India's largest commodity futures exchange where the clearance and settlements of the exchange happens and the turnover of the exchange for quarter ended September 2017 was 26.08 trillion rupees. MCX offers futures trading in bullion, non-ferrous metals, energy, and a number of agricultural commodities (mentha oil, cardamom, crude palm oil, cotton and others).

1.1.4 RISK AND RETURN

The relationship between risk and return is an essential factor in all human decision making. Each investment that a firm undertakes, for example, must offer a return that is at

least as high as the return on a similarly risky investment on financial markets. Otherwise shareholders would choose to invest in the financial markets rather than in the firm portfolio theory. Risk is explained theoretically as the fluctuation in returns from a security.

A security that yields consistent returns over a period of time is termed as —riskless security or —risk free security. Whereas, a security whose returns fluctuate significantly is considered a high-risk security. Equity shares whose returns are likely to fluctuate widely are considered risky investments. Risk is the potential for variability in returns.

The concept of risk and return analysis is integral to the process of investing and finance. All financial decisions involve some risk. One may expect to get a return of 15% per annum in his investment but the risk of "not able to achieve 15% return" will always be there. Return is simply a reward for investing as all investing involves some risk.

➤ **RETURNS**

A return is the gain or loss of a security in a particular period. The return consists of the income and the capital gains relative on an investment, and it is usually quoted as a percentage. The general rule is that the more risk you take, the greater the potential for higher returns and losses.

➤ **RISK**

Risk is potential of losing something of value. Values (such as physical health, social status, emotional well-being or financial wealth) can be gained or lost when taking risk resulting from a given action, activity and/or inaction, foreseen or unforeseen. Risk can also be defined as the intentional interaction with uncertainty. Uncertainty is a potential, unpredictable, immeasurable and uncontrollable outcome; risk is a consequence of action taken in spite of uncertainty.

Risk perception is the subjective judgment people make about the severity and/or probability of a risk, and may vary person to person. Any human endeavor carries some risk, but some are much riskier than others.

On a macro level there are two main types of risks - Systematic risk and Unsystematic risk.

A) Systematic Risk

Systematic risk refers to that portion of total variability (risk) in return caused by factors affecting the prices of all securities. Economic, political, and sociological changes are the main sources of systematic risk. Though it affects all the securities in the market, the extent to which it affects a security varies from one to another. The systematic risks of various securities differ due to their relationship with market. Systematic risk cannot be diversified but measured in terms of beta (β), a statistical measure. The β factor describes the movement in a security's or a portfolio's return in relation to that of the market returns. Beta of one ($\beta=1$), indicates that volatility of return on the security is same as the market or index; beta more than one ($\beta>1$) indicates that the security has more unavoidable risk or is more volatile than market as a whole, and beta less than one ($\beta<1$) indicates that the security has less systematic risk or is less volatile than market.

B) Unsystematic Risk:

Unsystematic risk refers to that portion of total risk that is unique or peculiar to a firm or an industry, above and beyond that affecting securities markets in general. Factors like consumer preferences, labor strikes, management capability etc. cause unsystematic risk (variability of returns) for a company's stock. Unlike systematic risk, the unsystematic risk can be reduced /avoided through diversification. Total risk of a fully diversified portfolio

equals the market risk of the portfolio as its specific risk becomes zero. Important micro types of risks that are taken into account for the valuation of a stock or bond include: Every investment opportunity carries some risks or the other. In some investments, a certain type of risk may be predominant, and others not so significant. Seven major risks are present in varying degrees in different types of investments.

1. Default risk: This is the most frightening of all investment risks. The risk of nonpayment refers to both the principal and the interest. For all unsecured loans, e.g. loans based on promissory notes, company deposits, etc, this risk is very high.

2. Business risk: The market value of the investment in equity shares depends upon the performance of the company where one invests in. If a company's business suffers and the company does not perform well, the market value of the share can go down sharply. This invariably happens in the case of shares of companies which hit the IPO market with issues at high premium when the economy is in a good condition and the stock market's bullish.

3. Liquidity risk: Liquidity risk refers to the possibility of the investor not being able to realize its value when required. This may happen either because the security cannot be sold in the market or prematurely terminated, or because the resultant loss in value may be unrealistically high.

4. Purchasing power risk or inflation risk: Inflation means being laden with a lot of money in one's pocket. When prices shoot up, the purchasing power of money goes down. Some economists consider inflation to be a disguised tax. However, the recent trend of rising inflation across the globe is posing serious challenge to the governments and central banks. In India's case, inflation, in terms of the wholesale prices, which remained benign during the last few years, began firming up from June 2006 onwards and topped double digits in the third week of June 2008.

5. Interest rate risk: In this deregulated era, interest rate fluctuation is a common phenomenon with its consequent impact on investment values and yields. Interest rate risk affects the value of bonds more directly than stocks.

6. Political risk: The government has extraordinary powers to affect the economy; it may introduce legislation affecting some industries or companies in which invested, or it may introduce legislation granting debt-relief to certain sections of society, fixing ceilings of property, etc. Change in government policies is one reason for political risk. International political developments also have an impact on the domestic scene, what with markets becoming globalized. This was amply demonstrated by the aftermath of 9/11 events in the USA and in the countdown to the Iraq war early in 2003.

7. Market risk: Market risk is the risk of movement in security prices due to factors that affect the market as a whole. Natural disasters can be one such factor. The most important of these factors is the phase (bearish or bullish) the markets are going through. Stock markets and bond markets are affected by rising and falling prices due to alternating bullish and bearish periods. Thus Bearish stock markets usually precede economic recessions. Bullish stock markets are witnessed during economic recovery and boom periods.

1.2 BANKING SECTOR

The banking sector is the section of the economy devoted to the holding of financial assets for others, investing those financial assets as leverage to create more wealth, and the regulation of those activities by government agencies. The banking sector is the lifeline of any modern economy. It is one of the important financial pillars of the financial sector, which plays a vital role in the functioning of an economy. It is very important for economic

development of a country that its financing requirements of trade, industry and agriculture are met with higher degree of commitment and responsibility. Thus, the development of a country is integrally linked with the development of banking. In a modern economy, banks are to be considered not as dealers in money but as the leaders of development. They play an important role in the mobilization of deposits and disbursement of credit to various sectors of the economy. The banking system reflects the economic health of the country. The strength of an economy depends on the strength and efficiency of the financial system, which in turn depends on a sound and solvent banking system. A sound banking system efficiently mobilized savings in productive sectors and a solvent banking system ensures that the bank is capable of meeting its obligation to the depositors.

1.2.1 Holding of Financial Assets

This is the core of all banking, and where it began — though it has expanded far beyond the days of holding gold coins for Holy Land pilgrims in exchange for promissory notes. A bank holds assets for its clients, with a promise that the money may be withdrawn if the individual or business needs said assets back. Avoiding devastating bank runs that could destroy the sector as a whole is why banks are required to maintain at least 8% of their book values as actual money.

1.2.2 Using Assets as Leverage

Traditionally, banks leverage the money in their vaults as loans, earning money from the interest rates charged on those loans. The great contradiction of banking is that almost all of a bank's actual money is nowhere near its vaults; meaning that its true value is only paper, yet that paper value is what grows the economy. The banking sector has always attempted to diversify its risks by investing as widely as possible; this prevents an unexpected loan default from sinking the entire bank. However, this can cause other problems. If a bank had invested in the aluminum futures market and had a vested interest

in increasing its value, it could simply prevent the aluminum from being sold to industry and drive up that value. This could have a knockback effect on industry and disrupt the economy, which the banking sector should avoid at all costs.

1.2.3 Regulation of Banking Activities

Because banks are the underpinning of a modern economy, governments naturally have laws in place to prevent banks from engaging in dangerous activity that threatens the economy; these laws are often enacted after hard financial lessons, such as the creation of the Federal.

1.3 NEED FOR STUDY

The study was conducted to analyze the Bankex movement behavior towards the banking stocks. It also evaluates the performance of banking share stock mainly the identification of required rate of return and risk of a particular stock based upon different risk elements prevailing in the market and other economic factors. This study is structured to analyze the performance of the equity shares in the banking industry to reveal the risk and return in a particular period of time. The banking security investment involves the elements of risk which may be high and low; but such risk depends upon the nature of the bank belong to. The investor before taking rational investment decisions analyses the equity in terms of risk and return, either individuality and selected banks for comparatively analysis. These analyses give clear idea about the selection of bank equity for investment list in stock market.

1.4 SCOPE OF STUDY

This study is mainly focused on the analysis of risk and returns impact of Public and Private sector banks which are listed in Bombay Stock exchange with the help of five years risk and returns. In general, the study helps to identify and understand there is any

significant relationship between the risk and return or not. The study covers a period of 5 years, i.e. starting from 1st January 2016 till 31st December 2020. It also evaluates the performance of banking share stock mainly the identification of required rate of return and risk of a particular stock based upon different risk elements prevailing in the market and other economic factors. This study is structured to analyze the performance of the selected shares in the banking industry to reveal the risk and return in a particular period of time.

1.5 OBJECTIVES OF THE STUDY

1.5.1 PRIMARY OBJECTIVE:

- To analysis the Return and Risk of public and private banks listed on BSE.

1.5.1 SECONDARY OBJECTIVES:

- To identify the various Public and Private sector banks listed on BSE Bankex.
- To analyze the Risk rate with Standard Deviation.
- To identify the correlation between Risk and Return of Public and Private sector Banks.
- To identify the impact of Risk of various bank on its Returns.
- To compare the performance risk and returns of each stock.
- To suggest investors regarding the investments based upon the performance of banking sector.

1.6 LIMITATIONS OF STUDY

- The area of study is limited to the stocks of 10 banks from Bank SEXSEX.
- The study includes 5 Public and 5 Private sector banks.
- The study is confined to a period of five years from 2016 to 2020.
- The accuracy is limited as the data collection was strictly confined to secondary sources.

CHAPTER 2

REVIEW OF LITERATURE

This chapter deals with abstracts of various studies conducted by some others in other topic of risk and return analysis and related topics.

Sarada Angaraju (2020) analyzed that the Indian financial sector is the back bone of the country economy development, the banking sector place a key role in empowerment of all areas. In the capital market equity market is playing economic development of nation but banking sector equity market have volatility and less returns on investment in some of the banks and some of the banks have more volatility and capital loss in investment also. The investors identify the minimum risk and maximum return on investment decisions through portfolio analysis.

Mayur Savsani, Uravi Rathod (2018) founds that the stock markets are contributing a voluminous extent in progress of the economy in India. The banking sector engages major share among other sectors in Indian stock trading scenario. The study examines the correlation between risk and return of the Sensex and banking stocks of BSE (Sensex). In this analysis for testing the presence or absence of risk return trade off in the Indian equity markets and for testing hypothesis, different methods like correlation, regression, descriptive statistics and test have been discussed.

Suresh , Sai Prakesh (2018) states that the Sector wise portfolio returns are also calculated for the same period, to compare the returns generated by public and private sector banks. Sector wise portfolio returns are also calculated for the same period, to compare the returns generated by public and private sector banks.

Naveen, Neeraja (2018) founded that in each and every individual decision making the risk and return analysis plays an important role. Every individual always need high (or) maximum returns and wants to avoid the risk. However it is expected that the actual

returns will always be different when we compare with the expected returns. In this risk and return analysis, high returns can be seen only when high risk presents and low returns can be seen only when low risk presents.

Kavya Venkatesh, Bhavya Vikas, Charithra (2018) says that the term risk is a situation in which the possibility of the consequence can be predicted, but uncertainty is the situation where the possibility cannot be predicted. Risk and uncertainty are part and parcel of investment. The possibility of risk is a loss for the investors. Risk and return of banking stocks as well as Data Envelopment analysis method is used for analyzing the efficiency of banks.

Tommy Daniel Andersson, Don Getz, David Gratton, Maria M. Raciti, (2017), found that the main purpose of this study to event portfolio analysis rooted in financial portfolio theory can yield meaningful insights to complement two approaches to event portfolios. The first approach is extrinsic and rooted in economic impact analysis where events need to demonstrate a financial return on investment. In the second approach events are valued ally, with every event having inherent value and the entire portfolio being valued for its synergistic effects and contribution to social and cultural goals.

Pramod Kumar patjoshi (2016) proposed that the stock markets in India are contributing an enormous extent in progress of the economy. The banking sector engages major share among other sectors in Indian stock trading scenario. In this study different Sensex and banking stock indices have been used to examine the risk return trade off of Sensex with that of HDFC Bank, ICICI Bank, Axis Bank and SBI. The study is based on secondary data.

Ritesh Patel and Dharmesh Shah (2016) founded that the purpose of this paper is to examine the comparative position of pre & post-merger stock risk-return performance of selected banks. Study covers comparison of Systematic and unsystematic risk during pre

& post-merger period. Stock risk-return analysis has presented mix evidence, i.e. for some banks after merger performance has improved whereas for few banks it has decreased. Finally, evidence shows that proper analysis before merger deal can improve bank's performance.

Pramod Kumar Patjoshi (2016) states that India's one of the superior stock exchange i.e. Bombay Stock Exchange (BSE). In this analysis for testing the presence or absence of risk return trade off in the Indian equity markets and for testing hypothesis, different methods like correlation, regression, descriptive statistics and t test have been employed.

Shaini Naveen, Mallikarjunappa (2016) analyzed the risk and return in banking sector taking Nifty Bank Index as the benchmark. The study compares the performance of the 12 listed banks in the NSE. Indian banking industry, the backbone of the country's economy has always played a positive key role in prevention the economic disaster from reaching horrible volume in the country. Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. It has achieved enormous appreciation for its strength, particularly in the wake of some of the worldwide economic disasters.

Shivani (2016) the author believes that stock market is highly volatile and it is up to the investors to decide how he could make use of the stock market to gain higher returns. According to the author Beta would be very helpful in comparing the relative systematic risk involved in different stocks. In practice investors use Beta to judge the riskiness each stock. An investor should remember risk is directly related to return and hence he should ensure to keep risk associated proportional to returns.

Prathibha & Dinakar (2016) the author analysed the risks of 12 banks listed in bank nifty for a period starting from 7th December 2015 till 8th February 2016. The author found from their research that, all the stocks had negative returns during the study period except Yes

bank and Kotak Mahindra bank. The author founded that Yes Bank had given the highest return and the lowest return was given by Punjab National Bank. It was also found that systematic risk was highest for SBI and lowest for Yes bank.

Mallikarjunappa. Shaini Naveen (2016) conducted a study on Comparative Analysis of Risk and Return with Reference to Stocks of CNX Bank Nifty. This study analyzes the risk and returns in the banking sector. In this analysis found some stocks move in the opposite direction to the Stock market, some stocks move along with the market, some stocks are less volatile compared to the market and some stocks are more volatile compared to the market.

Abdul Rashid, Faiza Hamid, (2015) analyze the mean variance capital asset pricing model (CAPM) and downside risk-based CAPM (DR-CAPM) developed by Bawa and Lindenberg (1977).

Menggen Chen, (2015) was conducted a study on risk-return tradeoff in Chinese stock markets: some recent evidence, the main purpose of the study was to explore the changes of the risk-return relationship over time, because the institutions and environment have changed a lot and might tend to influence the risk-return regime in the Chinese stock markets. This study was used to Chinese emerging stock markets with a sample including daily, weekly and monthly market return series.

Dubey (2014) The result of the study showed that the betas were more or less instable in terms of different trading stocks at different investment horizons. The study was undertaken on the basis of the characteristics of the heterogeneous investors with different investment horizons. In this study, it was stressed that holding different stocks by trading classes varied due to the time horizon of investment and perception of the risk. The study emphasized the conditions of business are very fluid i.e. the rate of change takes place in the phase of organization as fast as possible.

Jayakumar, Sumathi (2013) in their research found that the Indian Banking Sector is one of the wide sectors in the country and the various factors which affect the share prices of Banking Companies. In this result a detailed analysis of the trend in share price movement.

Sangeetha, Jain (2013) opinioned that banking companies in the service sector exhibit the problem of distinct results in terms of efficiency. This problem is a cause of concern for many big organizations in the service sector like hotels, courier companies, hospitals, banks and so on. In particular, the last decade has observed continuous amendment in regulation, technology and competition in the global financial services industry, and Indian banks are no exception.

Hemalatha (2013) conducted a study to analyze and understand the equity share of the Canara Bank. The study is fully based on the secondary data which have been collected from the company reports and websites. Today, Canara Bank occupies a premier position in the comity of Indian banks. The objective of the study is to analyze the price movement of share, to compare the stock price movements with the market and to discover the trend in the future.

Muthu Gopalakrisnan, Ramanathan(2013), studied post and prerecession period Indian stock market price fluctuations. The volatility in the market required to estimate the risk on investment. Researcher analyses the selected indexed stock volatility of sectoral in Nifty as on 28-03-2013 daily opening and closing price of 31 selected companies. This analysis helps in identifying volatility relationship during pre and post recession period.

Shanmuga sundram, Benedict, John (2013) deliberate risk influenced in the Indian Sectorial indices and Nifty. They found risk association in varied with time period. They had designated five Sectorial indices from NSE and Nifty Index for 8 years from 2004 to

2012. For the study t-Test and ANOVA carried out to find out the risk alteration between the sectors and Nifty.

Karan, (2012) in his paper research that Indian economy has been recording impressive growth rates since 1991. The main thrust of the financial sector reforms has been the creation of efficient and stable financial institutions and development of the markets, especially the money and government securities market. In addition, fiscal correction was undertaken and reforms in the banking and external sector were also initiated.

Sudheer, (2012) in his research found that technical analysis is study of predicting prices of securities for future the main aim of technical analysis is to generate returns by letting person decide when to enter and when to exit in the security. Bottom line is to buy at trough (deep decline) and to sell at peak to get substantial amount of return or profit.

Varathan, Tamilenthirai (2012) concluded that technical analysis of securities is a study of past price and volume trends to judge the direction of future price movements of scrips. The goal is to produce predictions of price direction and magnitude such that large gains from the relatively few correct predictions are more than enough to offset the many smaller losses from incorrect predictions, leading to a positive return in the long run through proper risk control and money management with the tools.

Juhi Ahuja (2012) presents a review of Indian Capital Market & its structure. In last decade or so, it has been observed that there has been a paradigm shift in Indian capital market. The application of many reforms & developments in Indian capital market has made the Indian capital market comparable with the international capital markets. Now, the market features a developed regulatory mechanism and a modern market infrastructure with growing market capitalization, market liquidity, and mobilization of resources.

Ayyappan, Sakthivadivel, (2012) Stated that the private sector Banks are expanding their products and services into various part of the country and are posing a real competition to the public sector Banks. A study was carried out to analyze the growth and trend of certain financial parameters of public and private sector Banks.

Kumar, (2011) indicates that exclusion of off-balance sheet activities not only understates the profit efficiency of individual banks but also affects the ranking of ownership groups in the industry. In particular when a proxy for off balance sheet activities is accounted for in the output specification, the foreign banks appear to be more efficient then public and private banking sector.

Soumya Guhadab ,Sagarika Misra (2011) found that there was evidence of instability of betas especially in Asia. This study aimed to find out, the expected return and risk connected over time by using the descriptive statistics. The study found that high returns and rational risk complicated in those South Asian countries.

Chitra, (2011) in her research found that technical analysis is a study of the stock market relating to factors affecting the supply and demand of stocks and also helps in understanding the intrinsic value of shares and to know whether the shares are undervalued or overvalued. The stock market indicators would help the investor to identify major market turning points

Venkatesh, Tyagi, (2011) in their research paper found that the results of a questionnaire survey in September to November 2010 on the use of Technical analysis by brokers/fund managers in Indian stock market to form their forecasts of share price movements. The findings of the research reveal that more than 85 percent of the respondents rely upon both Fundamental and Technical analysis for predicting future price movements at different time horizons

Arun kumar (2010) to investigate the validity of CAPM in Indian context by analysing the drug industry comprising 60 companies from BSE during the period from 2001 to 2007. The result of the study brought to light that there was a proof indicating that the theory of CAPM was applicable in Indian context.

Lalit Mohan Kathuria and Kanika Singhania (2010) concluded that the present study was conducted with an objective to analyze the level of knowledge regarding various investment avenues and present investment practices of employees of private sector banks in Ludhiana city. A sample of 150 respondents was selected from 19 private sector banks in London.

Francis Breedon and Angelo Ranaldo (2010) in this research paper he studies 10 years high-frequency foreign exchange data and studies shows that time-of-day effects in foreign exchange returns in the course of a significance propensity for currencies to devalue during local trading hours. Researcher confirms this pattern in series of currencies and fined that in EUR/USD pair is easy and profitable trading strategy.

Kapil and Sakshi (2010) made an attempt to explore the presence of validity of CAPM theory in Indian stock market. In order to test the applicability of CAPM in Indian context the study undertook the research in BSE 500 by identifying 278 companies and the return of the companies were computed and the same return was regressed with Market return to arrive the beta value with which the association could be ascertained in terms of risk and return. The study found that higher risk was not commensurate with high return indicating that the theory of CAPM was discounted in Indian context.

Willem, Keeris, Ruben, Langbroek, (2009) indicates that investment decisions, the anticipated value creation of a property investment should be identified by the investor. Because usual methods of analysis for determining the return/risk profile produce an inaccurate and incomplete.

Faid Gul and Tariq Javed (2009) examined relationship between trading volume and stock exchange performance: A case from Karachi stock exchange” researcher study the connection between trading volume and performance of stock exchange index of the Pakistani stock market.

Massoud Metghalachi, Xavier Garza-Gomez, Yong Glasure and Yung-Ho Chang (2008) he analyzed that the “Moving Average Trading Rules Profitable? Evidence from the Mexican Stock Market” researcher studies three moving average technical trading rule for the Mexican Stock Market and the result indicate that moving average rules do indeed have predictive power and can generate consistent profits.

Robert Gay (2008) analyzes the four emerging companies such as Brazil, Russia, China and India by way of identifying the intervening variables. The study used ARIMA model to find the influence of intervening variables on Stock market return and further the study concluded that there was no significant relationship between the intervening variables and the Stock market return.

Singh (2008) emphasized that beta was the best measure to find out the systematic risk and the same concept of beta was used by finance practitioners to arrive at capital budgeting techniques, portfolio formation and performance evaluation. The study tested the stationary of beta over time to identify the factors that helped to forecast the stability of

beta. The study applied bull and bear market phases to test the co-movement of scrip return and market return with respect to individual stocks and portfolios.

Ahmed (2008) made an attempt in his study to find out the —Causal relationship between stock price and various economic factors on the basis of assumption of the economic variables might be the cause of determining price of the scrip with respect to Indian economyll. The data were collected covering 12 years on the basis of quarterly information. The study used Indian Industrial Production, exports, foreign direct investment, money supply and as a proxy for economic variables and SENSEX was taken for the proxy of market return.

Massoud Metghalachi, Xavier Garza-Gomez, Yong Glasure and Yung-Ho Chang (2007) researcher studies that two moving average technical trading rule for the Austrian Stock Market. Result point out that moving average rules certainly have predictive power and could separate recurring price patterns for profitable trading.

Shijin, Arun kumar (2007) proposed the vector autoregressive model, Granger-causality tests and variance decomposition analysis to find the nature of relationship that exists among the three factors (market risk, size, and value) proposed by Fama-French (1992). The results of the study are expected to provide better insights to investors in understanding the risk return characteristics that exist among the factors that affect stock prices.

Kohers and others (2006) made an effort in comparing the return of the stock market with respect to emerging markets and developed markets. The study explained by way of analyzing 49 companies of which 26 countries belonged to emerging countries and remaining 23 countries belonged to developed countries. The study found that the risk

associated with the emerging market were more than developed countries. Since the expected return of the investment in the emerging markets was commensurate with risk.

Mark Grinblatt , Tobias Moskowitz (2003) in this paper he predicts stock price movement from past return: the role of consistency and tax loss selling researcher studies that the regularity of positive past returns and tax loss considerably affects.

Philippe Gergooire (2001) conducted a study according to him simple forms of technical analysis possessed significant forecast power on various market indexes. He shows that these results can be replicated on formally selected European indexes, which almost completely eliminates any influences from data – snooping. Implications of these results in terms of market-efficiency are also discussed.

Michael Jensen , George Benington (2001) in this research he studied the random walk and efficient market theories of security price behavior imply that stock market trading rules based exclusively on the past price cycle cannot make profits bigger than those generated by a simple buy-and-hold policy.

Raghavan (2000), opinion is risk measures are related to return measurements; Minimum risks have to be taken to get adequate returns. Investment Returns can be increased or made quicker by taking more financial and operating risks. But the environmental risks typically do not increase investment returns.

Andrew , Harry Mamaysky , Jiang Wang (2000) has made researcher investigate that methodical and automatic approach to technical pattern recognition using nonparametric kernel regression applied on U.S. stock from 1962 to 1996 to estimate the success of technical analysis.

Charles Lee, Bhaskaran Swaminithan (2000) he examined the price momentum and trading volume that past trading volume provides a vital link between momentum and value strategies.

Pallavi,(2000) in her research found that , as far as the Indian banking is concerned it can be categorized indifferent modes such as government owned, private banking and specialized banking institution. In India Reserve Bank of India is the control body which works above to all Indian banks. Since from 1969 the public sectors banks has cover-up the decades to establish the Indian banking sector due to the demand of customer value and customer base.

CHAPTER – 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

The research design stands for advance planning of the methods to be adopted for collection of the relevant data and techniques to be used in analysis, keeping the view the objectives of the research and availability of time.

In general, research design is the conceptual structure writing which research is conducted: it constitutes the measurement and analysis of data.

Descriptive design is used for the purpose of this study. Secondary data is collected for its subsequent analysis and conclusive Interpretation.

3.2 SAMPLING TECHNIQUE

Sampling is the process of selecting the sufficient number of elements from the population (the items selected technically are called Sampling). The study uses Convenient Sampling Technique. Totally 42 banks (Public-30, Private-12) are listed in BSE Bankex. The samples taken for this study is 5 Public and 5 Private sector banks

3.3 SOURCES OF DATA

The present study based on secondary data collected from the official website of Yahoo finance, Moneycontrol websites. Historical prices of the 10 banks are been collected from Bombay Stock Exchange (BSE) websites for the year 2016 to 2020.

3.4 SAMPLE SIZE

Sample size means the number of sampling units selected and it helps to achieve of research. The sampling method used in this research is Convenient Sampling technique. This study carries out for a brief period to analyze the performance of listed equity shares of 5 public and 5 private sector banks of BSE with a time frame of 5 years from 2016 to 2020.

Table 3.1 Selected Public and Private sector Banks

S.No	Name of the Banks	Sector
1.	SBI Bank	Public
2.	Canara Bank	Public
3.	Indian Bank	Public
4.	Punjab National Bank	Public
5.	Bank Of Baroda	Public
6.	ICICI Bank	Private
7.	AXIS Bank	Private
8.	HDFC Bank	Private
9.	Kotak Mahindra Bank	Private
10.	The Federal Bank	Private

3.5 PERIOD OF STUDY

The study period is from January 2016 – December 2020.

3.6 ANALYTICAL TOOLS

3.6.1 Return

A return is the gain or loss of a security in a particular period. The return consists of the income and the capital gains relative on an investment, and it is usually quoted as a percentage. The general rule is that the more risk you take, the greater the potential for higher returns and losses.

$$\text{Return} = (\text{Opening price}-\text{Closing price})/\text{Opening price} * 100$$

3.6.2 Risk

Risk is potential of losing something of value. Values (such as physical health, social status, emotional well-being or financial wealth) can be gained or lost when taking risk resulting from a given action, activity and/or inaction, foreseen or unforeseen. Risk can also be defined as the intentional interaction with uncertainty. Uncertainty is a potential, unpredictable, immeasurable and uncontrollable outcome; risk is a consequence of action taken in spite of uncertainty.

$$\text{Risk} = \sqrt{\sum D^2 / (N - 1)}$$

3.6.3 Mean

Mean is an essential concept in mathematics and statistics. The mean is the average or the most common value in a collection of numbers. In statistics it is a measure of central tendency of a probability distribution along median and mode. It is also referred to as an expected value. It is a statistical concept that carries a major significance in finance. An estimation of price that uses the average or representative price of a large number of trades.

The concept is used in various financial fields, including but not limited to portfolio management and business valuation.

Mean = $\sum R/N$, Where $\sum R$ is Sum of returns of the stock

N is number of Months

3.6.4 Standard Deviation

A standard deviation is a statistic that measures the dispersion of a dataset relative to its mean and is calculated as the square root of the variance. The standard deviation is calculated as the square root of variance by determining each data point's deviation relative to the mean. If the data points are further from the mean, there is a higher deviation within the data set; thus, the more spread out the data, the higher the standard deviation. A volatile stock has a high standard deviation, while the deviation of a stable blue-chip stock is usually rather low. As a downside, the standard deviation calculates all uncertainty as risk, even when it's in the investor's favor—such as above-average returns.

$$\text{Standard Deviation} = \sqrt{\text{Variance}}$$

3.6.5 Correlation Analysis

Correlation analysis is a statistical method used to evaluate the strength of relationship between two quantitative variables. A high correlation means that two or more variables have a strong relationship with each other, while a weak correlation means that the

variables are hardly related. In other words, it is the process of studying the strength of that relationship with available statistical data. This study of correlation is analysed through IBM SPSS version 1.0.0.1447.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

3.6.6 Regression Analysis

Regression analysis is a set of statistical methods used for the estimation of relationships between a dependent variable and one or more independent variables. It can be utilized to assess the strength of the relationship between variables and for modeling the future relationship between them. Regression analysis includes several variations, such as linear, multiple linear, and non linear. The most common models are simple linear and multiple linear. Nonlinear regression analysis is commonly used for more complicated data sets in which the dependent and independent variables show a nonlinear relationship. This study used simple linear regression. This study of correlation is analyzed through IBM SPSS version 1.0.0.1447.

Simple Linear regression: $Y = a + bX$

CHAPTER – 4

DATA ANALYSIS AND INTERPRETATION

4.1 RETURN ANALYSIS

Table 4.1 Returns of Public and Private Sector Banks

Name of the Bank	2016	2017	2018	2019	2020
SBI Bank	6.87	7.75	-3.03	0.41	4.59
Canara Bank	-6.93	5.25	-10.93	1.01	-3.34
Indian Bank	5.44	13.70	6.45	1.61	2.50
Punjab National Bank	0.55	4.66	-17.20	-22.76	0.32
Bank Of Baroda	0.73	2.81	-4.59	0.86	0.40
ICICI Bank	10.63	12.34	6.75	3.82	5.30
AXIS Bank	16.80	7.54	5.70	8.34	10.18
HDFC Bank	18.37	22.41	17.90	15.67	13.65
Kotak Mahindra Bank	8.96	16.18	13.02	13.45	10.93
The Federal Bank	6.42	15.80	6.76	9.71	7.29

Interpretation:

Above table.4.1 shows the Returns on Equity rate of Public sector banks, where Indian Bank get the highest return of 13.70% for the year 2017 and Punjab National Bank gets the lowest returns of -22.76% for the year 2019. And also it shows the Returns on Equity rate on Private sector banks, where HDFC Bank get the highest return of 22.41% for the year 2017 and ICIC Bank gets the lowest returns of 3.82% for the year 2019.

Inference:

The rate of returns clearly shows the investors that it is well suggested to invest in private sector banks comparing to public sector banks as HDFC banks gives the highest returns of 22.41%.

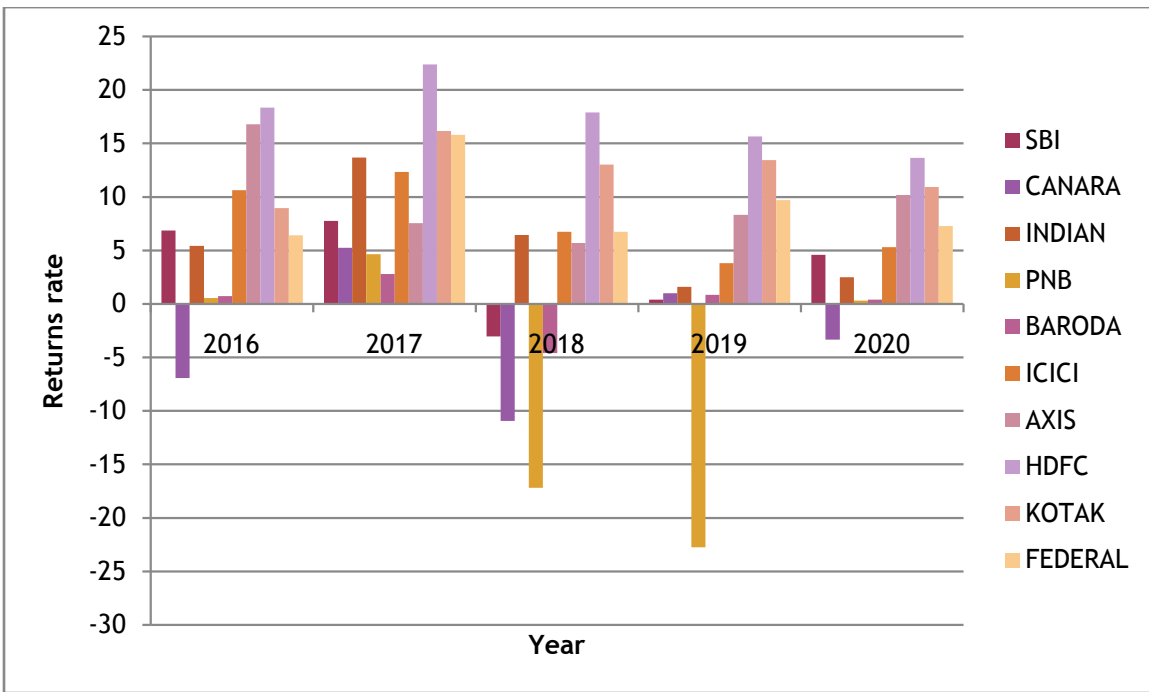


Chart 4.1 Returns of Public and Private Sector Banks

4.2 RISK ANALYSIS

Table 4.2 Risk rate of Private and Private Sector Banks

Name of the Bank	2016	2017	2018	2019	2020
SBI Bank	0.01	0.57	0.23	0.04	1.04
Canara Bank	0.01	0.02	1.14	0.13	0.99
Indian Bank	2.08	1.80	1.01	0.49	0.64
Punjab National Bank	0.12	0.01	5.18	3.03	0.08
Bank Of Baroda	0.06	0.43	0.70	0.10	0.11
ICICI Bank	1.00	1.09	0.71	0.47	0.86
Axis Bank	2.11	0.35	0.47	0.52	1.41
HDFC Bank	1.53	2.62	0.92	1.06	2.04
Kotak Mahindra Bank	0.64	1.42	1.06	1.33	1.75
The Federal Bank	1.31	1.94	0.60	0.83	1.89

Interpretation:

Above table 4.2 shows the Risk rates of Public sector banks, where Punjab National Bank get the highest Risk rate of 5.18% for the year 2019 and SBI Bank and Canara Bank gets the lowest Risk rate of -22.76% for the year 2016. And also shows the Risk Rate of Private sector banks, where HDFC Bank get the highest Risk rate of 2.62% for the year 2017 and Axis Bank gets the lowest Risk rate of 0.35% for the year 2017.

Inference:

As comparing with 5 years of risk rates, it is suggested to investors that the private sector banks has lowest risk rate comparing with public sector banks. Hence it's a better option for the investors to do their investments in private sector banks.

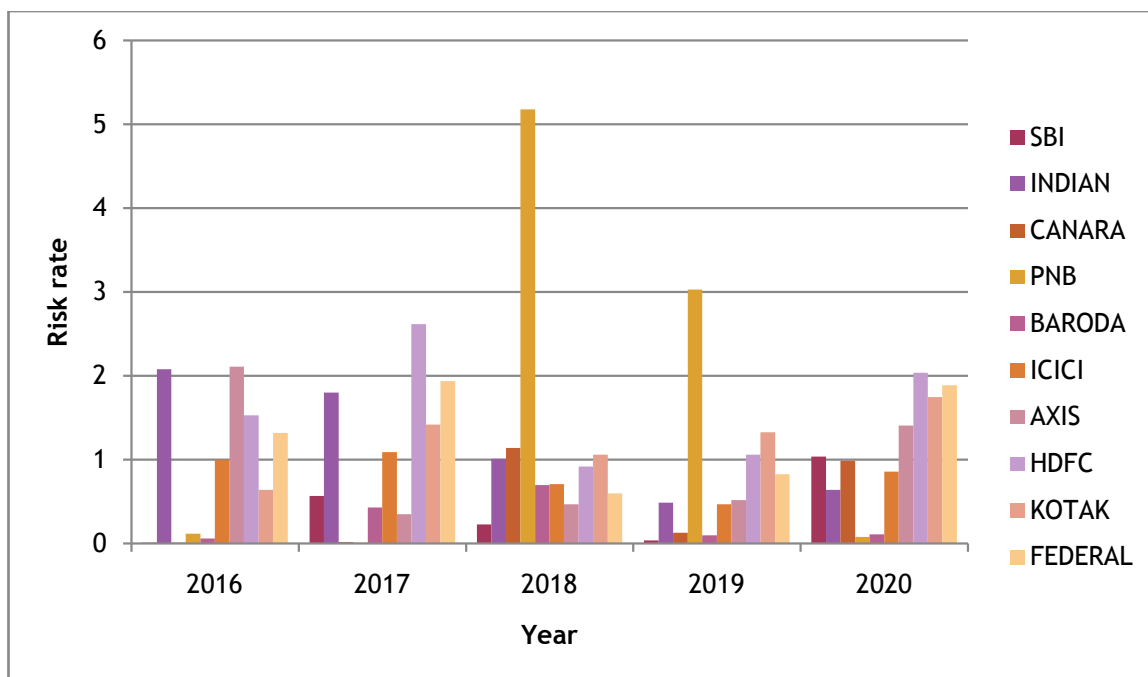


Chart 4.2 Risk Rate of Public and Private Sector Banks

4.3 COMPARATIVE PERFORMANCE ANALYSIS OF PUBLIC AND PRIVATE SECTOR BANKS

TABLE.4.3 Performance ranking of Public and Private sector Banks

NAME OF THE BANK	MEAN	STANDARD DEVIATION	RANK
HDFC Bank	17.6	3.284296	1
Kotak Mahindra Bank	12.508	2.725412	2
AXIS Bank	9.712	4.276531	3
The Federal Bank	9.196	3.909927	4
ICICI Bank	7.768	3.598898	5
Indian Bank	5.94	4.777819	6
SBI Bank	3.318	4.545076	7
Bank Of Baroda	0.042	2.75626	8
Canara Bank	-2.988	6.375486	9
Punjab National Bank	-6.886	12.23615	10

Interpretation:

The above table.4.3 shows the rankings of the banks based on their performance, where the mean is highest in case of Kotak Mahindra Bank Axis i.e. 12.51% and lowest negative returns in case of Punjab National Bank i.e. -6.886. In case of Standard Deviation, Punjab National Bank has the highest value of 12.23615 which indicates high risk for investments and lowest in case of Kotak Mahindra Bank i.e. 2.725412 which indicates low risk in investments.

Inference:

As Kotak Mahindra banks has the lowest volatility rate, it indicates that investors can invest in Kotak or in any private sector banks as there is low risk in investments comparing with public sector banks. The same goes well for average returns percentage to, kotak Mahindra bank which is private sector bank records the highest returns and public sector bank – PNB bank records the negative returns.

4.4 CORRELATION ANALYSIS

ICICI BANK

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.4

H0: There is no significant relationship between Risk & Return in ICICI Bank

H1: There is significant relationship between Risk & Return in ICICI Bank

Table 4.4 Correlation between Risk and Return for ICICI Bank

	Return	P Value	Significance level
Risk	.889	.043*	Significant*

*Significant at 0.05 level

Inference:

From the table 4.4 since the P value is 0.043 which is lesser than 0.05; hence the relationship between Risk and Return is significant. Hence Reject H0.

AXIS BANK

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.5

H0: There is no significant relationship between Risk & Return in Axis Bank

H1: There is significant relationship between Risk & Return in Axis Bank

Table 4.5 Correlation between Risk and Return for AXIS Bank

	Return	P Value	Significance level
Risk	.939	.018*	Significant*

*Significant at 0.05 level

Inference:

From the table 4.5 since the P value is 0.018 which is lesser than 0.05; hence the relationship between Risk and Return is significant. Hence Reject H₀.

HDFC BANK

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.6

H₀: There is no significant relationship between Risk & Return in HDFC Bank

H₁: There is significant relationship between Risk & Return in HDFC Bank

Table 4.6 Correlation between Risk and Return for HDFC Bank

	Return	P Value	Significance level
Risk	.427	.473*	Not Significant*

*Significant at 0.05 level

Inference:

From the table 4.6 since the P value is 0.473 which is greater than 0.05; hence the relationship between Risk and Return is no significant. Hence Accept H₀.

Kotak Mahindra Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.7

H0: There is no significant relationship between Risk & Return in Kotak Mahindra Bank

H1: There is significant relationship between Risk & Return in Kotak Mahindra Bank

Table 4.7 Correlation between Risk and Return for Kotak Mahindra Bank

	Return	P Value	Significance level
Risk	.436	.463*	Not Significant*

Inference:

From the table 4.7 since the P value is 0.46 which is greater than 0.05; hence the relationship between Risk and Return is no significant. Hence Accept H0.

The Federal Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.8

H0: There is no significant relationship between Risk & Return in Federal Bank

H1: There is significant relationship between Risk & Return in Federal Bank

Table 4.8 Correlation between Risk and Return for The Federal Bank

	Return	P Value	Significance level
Risk	.476	.418*	Not Significant*

Inference:

From the table 4.8 since the P value is 0.418 which is greater than 0.05; hence the relationship between Risk and Return is no significant. Hence Accept H0.

SBI Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.9

H0: There is no significant relationship between Risk & Return in SBI Bank

H1: There is significant relationship between Risk & Return in SBI Bank

Table 4.9 Correlation between Risk and Return for SBI Bank

	Return	P Value	Significance level
Risk	.294	.631*	Not Significant*

Inference:

From the table 4.9 since the P value is 0.63 which is greater than 0.05; hence the relationship between Risk and Return is not significant. Hence Accept H0.

Indian Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.10

H0: There is no significant relationship between Risk & Return in Indian Bank

H1: There is significant relationship between Risk & Return in Indian Bank

Table 4.10 Correlation between Risk and Return for Indian Bank

	Return	P Value	Significance level
Risk	.677	.209*	Not Significant*

Inference:

From the table 4.10 since the P value is 0.20 which is greater than 0.05; hence the relationship between Risk and Return is not significant. Hence Accept H0.

Canara Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.11

H0: There is no significant relationship between Risk & Return in Canara Bank

H1: There is significant relationship between Risk & Return in Canara Bank

Table 4.11 Correlation between Risk and Return for Canara Bank

	Return	P Value	Significance level
Risk	-.615	.270*	Not Significant*

Inference:

From the table 4.11 since the P value is 0.27 which is greater than 0.05; hence the relationship between Risk and Return is not significant. Hence Accept H0.

Punjab National Bank

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.12

H0: There is no significant relationship between Risk & Return in Punjab National Bank

H1: There is significant relationship between Risk & Return in Punjab National Bank

Table 4.12 Correlation between Risk and Return for Punjab National Bank

	Return	P Value	Significance level
Risk	-.874	.05*	Significant*

Inference:

From the table 4.12 since the P value is 0.05 which is lesser than 0.05; hence the relationship between Risk and Return is significant. Hence Reject H₀.

Bank of Baroda

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.13

H₀: There is no significant relationship between Risk & Return in Bank of Baroda

H₁: There is significant relationship between Risk & Return in Bank of Baroda

Table 4.13 Correlation between Risk and Return for Bank of Baroda

	Return	P Value	Significance level
Risk	-.617	.267*	Not Significant*

Inference:

From the table 4.13 since the P value is 0.267 which is greater than 0.05; hence the relationship between Risk and Return is not significant. Hence Accept H₀.

4.5 REGRESSION ANALYSIS

ICICI Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.14

H0: There is no significant impact of Risk of ICICI Bank on its Return

H1: There is significant Impact of Risk of ICICI Bank on its Return

Table 4.14 Regression Analysis between Risk and Return for ICICI Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.889 ^a	.791	.721	1.90000

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	40.978	1	40.978	11.351	.043 ^b
	Residual	10.830	3	3.610		
	Total	51.808	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.14 it is noted that P value is lesser than 0.05, so the impact of return over risk is significant. Hence Reject H0. Return has 79.1% impact on the risk of ICICI bank.

AXIS Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.15

H0: There is no significant impact of Risk of Axis Bank on its Return.

H1: There is significant Impact of Risk of Axis Bank on its Return.

Table 4.15 Regression Analysis between Risk and Return for AXIS Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.939 ^a	.881	.842	1.70162

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	64.468	1	64.468	22.265	.018 ^b
	Residual	8.687	3	2.896		
	Total	73.155	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.15 it is noted that P value is lesser than 0.05, so the impact of return over risk is significant. Hence Reject H0. Return has 88.1% impact on the risk of Axis bank.

HDFC Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.16

H0: There is no significant impact of Risk of HDFC Bank on its Return.

H1: There is significant Impact of Risk of HDFC Bank on its Return.

Table 4.16 Regression Analysis between Risk and Return for HDFC Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.427 ^a	.182	-.090	3.42951

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.862	1	7.862	.668	.473 ^b
	Residual	35.285	3	11.762		
	Total	43.146	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.16 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 18.2% impact on the risk of HDFC bank.

Kotak Mahindra Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.17

H0: There is no significant impact of Risk of Kotak Mahindra Bank on its Return.

H1: There is significant Impact of Risk of Kotak Mahindra Bank on its Return.

Table 4.17 Regression Analysis between Risk and Return for Kotak Mahindra Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.436 ^a	.190	-.080	2.83243

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.643	1	5.643	.703	.463 ^b
	Residual	24.068	3	8.023		
	Total	29.711	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.17 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 19% impact on the risk of Kotak Mahindra bank.

The Federal Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.18

H0: There is no significant impact of Risk of Federal Bank on its Return.

H1: There is significant Impact of Risk of Federal Bank on its Return.

Table 4.18 Regression Analysis between Risk and Return for The Federal Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.476 ^a	.227	-.031	3.97035

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.859	1	13.859	.879	.418 ^b
	Residual	47.291	3	15.764		
	Total	61.150	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.18 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 22.7% impact on the risk of The federal bank.

SBI Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.19

H0: There is no significant impact of Risk of SBI Bank on its Return.

H1: There is significant Impact of Risk of SBI Bank on its Return.

Table 4.19 Regression Analysis between Risk and Return for SBI Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.294 ^a	.086	-.218	5.01648

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.136	1	7.136	.284	.631 ^b
	Residual	75.495	3	25.165		
	Total	82.631	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.19 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 0.86% impact on the risk of SBI bank.

Indian Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.20

H0: There is no significant impact of Risk of Indian Bank on its Return.

H1: There is significant Impact of Risk of Indian Bank on its Return.

Table 4.20 Regression Analysis between Risk and Return for Indian Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.677 ^a	.458	.278	4.06105

a. Predictors: (Constant), Risk

		ANOVA ^a				
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	41.834	1	41.834	2.537	.209 ^b
	Residual	49.476	3	16.492		
	Total	91.310	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.20 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 45.8% impact on the risk of Indian bank.

Canara Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.21

H0: There is no significant impact of Risk of Canara Bank on its Return.

H1: There is significant Impact of Risk of Canara Bank on its Return..

Table 4.21 Regression Analysis between Risk and Return for Canara Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615 ^a	.378	.170	5.80663

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	61.436	1	61.436	1.822	.270 ^b
	Residual	101.151	3	33.717		
	Total	162.587	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.21 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 37.8% impact on the risk of Canara bank.

Punjab National Bank

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.22

H0: There is no significant impact of Risk of Punjab National Bank on its Return.

H1: There is significant Impact of Risk of Punjab National Bank on its Return.

Table 4.22 Regression Analysis between Risk and Return for Punjab National Bank

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874 ^a	.763	.684	6.87689

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	457.018	1	457.018	9.664	.053 ^b
	Residual	141.875	3	47.292		
	Total	598.893	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.22 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 76.3% impact on the risk of Punjab National bank.

Bank of Baroda

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.23

H0: There is no significant impact of Risk of Bank of Baroda on its Return.

H1: There is significant Impact of Risk of Bank of Baroda on its Return.

Table 4.23 Regression Analysis between Risk and Return for Bank of Baroda

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.617 ^a	.381	.174	2.50442

a. Predictors: (Constant), Risk

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.572	1	11.572	1.845	.267 ^b
	Residual	18.816	3	6.272		
	Total	30.388	4			

a. Dependent Variable: Return

b. Predictors: (Constant), Risk

Inference:

From the above table 4.23 it is noted that P value is greater than 0.05, so the impact of return over risk is not significant. Hence Accept H0. Return has 38.1% impact on the risk of Bank of Baroda.

CHAPTER – 5

FINDINGS, SUGGESTIONS AND CONCLUSIONS

5.1 FINDINGS

This study is an attempt to understand the impact of Risk and Return of Public and Private sector Banks which are listed in BSE. The data used for the study are daily closing price and yearly returns on equity of the selected banks indices of bank of five years, starting from 1st January 2016 to 31st December 2020. The main findings of the study are:

- Comparing of both Public and Private sector banks, HDFC Bank -Private sector bank gives the highest returns of 22.41% and PNB – Public sector bank gives the negative returns of -22.76%.
- Risk is higher in case of PNB - Public sector bank i.e 5.18% and lower in case of Axis Bank- Private sector bank i.e 0.35%.
- Average returns is high in Kotak Mahindra Bank (Private) and low in Punjab National Bank (Public).
- As Standard deviation indicates the volatility rate, Punjab nation bank(Public) has the highest volatility rate of 12.23615 and low in Kotak Mahindra Bank (Private) of 2.725412.
- The result of Correlation shows that Risk and Return are positively correlated in ICICI bank.
- There is positive correlation between risk and return in Axis bank.
- There is positive correlation between risk and return in HDFC bank.
- There is positive correlation between risk and return in Kotak Mahindra bank.
- There is positive correlation between risk and return in The Federal bank

- There is positive correlation between risk and return in SBI bank.
- There is positive correlation between risk and return in Indian bank.
- There is negative correlation between risk and return in Canara bank.
- There is negative correlation between risk and return in Punjab national bank.
- There is negative correlation between risk and return in Bank of Baroda.
- For regression analysis, Risk has 79.1% impact on Return in ICICI bank.
- Risk has 88.1% impact on Return in Axis bank
- Risk has 18.2% impact on Return in HDFC bank
- Risk has 19% impact on Return in Kotak Mahindra bank.
- Risk 22.7% impact on Return in The Federal bank
- Risk has 0.81% impact on Return in SBI bank
- Risk has 45.8% impact on Return in Indian bank
- Risk has 37.8% impact on Return in Canara bank
- Risk has 76.3% impact on Return in Punjab National bank
- Risk has 38.1% impact on Return in Bank of Baroda

5.2 SUGGESTIONS

From the forgoing analysis and findings, the following suggestions are given:

- The Return of Private Sector Bank sector shows a significant higher rate of return with comparatively low risk in last five years compared with Public Sector Banks. Among the sectors it is recommended that the investor can consider the Private Sector Bank to invest their money to earn good return with respective rate of risk.
- The government policy, foreign exchange fluctuations, particularly exchange rate and interest rate between countries should also be taken into consideration before investing in equity share of any sectors.

- When there is more risk, the return will also be high, so the investor must undertake the risk for getting good return.
- The investor should not invest their whole money in one security and invest in other securities as there is diversification. This will help to reduce the risk.

5.3 CONCLUSION

The risk and return are the two sides of a same coin called investment. The study is based on the analysis of stocks listed on BSE BANKEX. This gives an idea to the investors to determine whether he is required to purchase the stocks on the basis of performance of the stock for a given period. A stock with higher standard deviation value is not preferred as it is exposed to higher market risk which cannot be diversified like unsystematic risk, hence such stocks are better to avoid for constructing a portfolio. This study is an attempt to evaluate the returns of banking stocks listed on BSE Bankex and to identify the best stocks to invest and the worst stocks to be ignored. If the investors are ready to take in higher risk for extra return, then the investors are suggested to invest in Public sector banks bank and where the risk is lower, the investors can invest in Private sector banks, that are giving higher returns. The investors who are looking for low risk with moderate return are suggested to invest in AXIS bank. However by constructing a portfolio the investors can minimise the risk of getting lower return. While taking decision, the investor can also consider the fundamental and technical analysis.

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APPENDIX – I

Closing Prices Details

Private Sector Banks - 2016

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	ICICI BANK							AXIS BANK							HDFC BANK						
2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
3	12/1/2015	226.4						12/1/2015	440.454						12/1/2015	525.595					
4	1/1/2016	199.253	-11.99%	(23.89)	2.06	(25.95)	673.51	1/1/2016	399.936	-9.20%	(36.79)	3.93	(40.72)	1,658.48	1/1/2016	509.188	-3.12%	(15.90)	6.64	(22.53)	507.74
5	2/1/2016	164.529	-17.43%	(28.67)	2.06	(30.73)	944.50	2/1/2016	367.698	-8.06%	(29.64)	3.93	(33.57)	1,126.90	2/1/2016	472.102	-7.28%	(34.39)	6.64	(41.03)	1,683.08
6	3/1/2016	204.838	24.50%	50.19	2.06	48.13	2,316.05	3/1/2016	435.604	18.47%	80.45	3.93	76.52	5,854.69	3/1/2016	519.989	10.14%	52.74	6.64	46.10	2,125.64
7	4/1/2016	204.881	0.02%	0.04	2.06	(2.02)	4.07	4/1/2016	462.746	6.23%	28.83	3.93	24.90	620.20	4/1/2016	550.207	5.81%	31.97	6.64	25.33	641.80
8	5/1/2016	212.328	3.63%	7.72	2.06	5.66	32.01	5/1/2016	505.224	9.18%	46.38	3.93	42.45	1,801.74	5/1/2016	573.458	4.23%	24.23	6.64	17.59	309.57
9	6/1/2016	207.999	-2.04%	(4.24)	2.06	(6.30)	39.71	6/1/2016	522.715	3.46%	18.10	3.93	14.17	200.69	6/1/2016	570.813	-0.46%	(2.63)	6.64	(9.27)	85.99
10	7/1/2016	232.289	11.68%	27.13	2.06	25.07	628.35	7/1/2016	535.061	2.36%	12.64	3.93	8.71	75.83	7/1/2016	610.071	6.88%	41.96	6.64	35.32	1,247.36
11	8/1/2016	227.738	-1.96%	(4.46)	2.06	(6.52)	42.54	8/1/2016	589.122	10.10%	59.52	3.93	55.59	3,090.56	8/1/2016	631.703	3.55%	22.40	6.64	15.76	248.34
12	9/1/2016	222.966	-2.10%	(4.67)	2.06	(6.73)	45.32	9/1/2016	535.912	-9.03%	(48.40)	3.93	(52.33)	2,738.88	9/1/2016	622.38	-1.48%	(9.19)	6.64	(15.83)	250.45
13	10/1/2016	244.882	9.83%	24.07	2.06	22.01	484.48	10/1/2016	481.267	-10.20%	(49.07)	3.93	(53.00)	2,809.28	10/1/2016	616.654	-0.92%	(5.67)	6.64	(12.31)	151.62
14	11/1/2016	234.189	-4.37%	(10.23)	2.06	(12.29)	150.95	11/1/2016	464.602	-3.46%	(16.09)	3.93	(20.02)	400.73	11/1/2016	587.093	-4.79%	(28.14)	6.64	(34.78)	1,209.87
15	12/1/2016	225.617	-3.66%	(8.26)	2.06	(10.32)	106.47	12/1/2016	445.068	-4.20%	(18.71)	3.93	(22.64)	512.67	12/1/2016	589.345	0.38%	2.26	6.64	(4.38)	19.19

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
KOTAK MAHINDRA BANK							FEDERAL BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2015	716.884						12/1/2015	53.6176					
1/1/2016	680.818	-5.03%	(34.25)	2.17	(36.42)	1,326.39	1/1/2016	44.1867	-17.59%	(7.77)	1.55	(9.32)	86.9112
2/1/2016	628.789	-7.64%	(48.05)	2.17	(50.22)	2,522.35	2/1/2016	44.2345	0.11%	0.05	1.55	(1.50)	2.25625
3/1/2016	679.421	8.05%	54.71	2.17	52.54	2,760.39	3/1/2016	44.1388	-0.22%	(0.10)	1.55	(1.65)	2.70779
4/1/2016	713.941	5.08%	36.27	2.17	34.10	1,163.06	4/1/2016	43.9952	-0.33%	(0.14)	1.55	(1.69)	2.86677
5/1/2016	744.969	4.35%	32.38	2.17	30.21	912.42	5/1/2016	50.1229	13.93%	6.98	1.55	5.43	29.4981
6/1/2016	761.331	2.20%	16.72	2.17	14.55	211.74	6/1/2016	55.1017	9.93%	5.47	1.55	3.92	15.3925
7/1/2016	760.084	-0.16%	(1.25)	2.17	(3.42)	11.66	7/1/2016	61.9475	12.42%	7.70	1.55	6.15	37.7776
8/1/2016	805.35	5.96%	47.96	2.17	45.79	2,096.92	8/1/2016	66.5925	7.50%	4.99	1.55	3.44	11.8558
9/1/2016	777.447	-3.46%	(26.94)	2.17	(29.11)	847.19	9/1/2016	69.6414	4.58%	3.19	1.55	1.64	2.68475
10/1/2016	814.984	4.83%	39.35	2.17	37.18	1,382.31	10/1/2016	79.4657	14.11%	11.21	1.55	9.66	93.3202
11/1/2016	754.934	-7.37%	(55.62)	2.17	(57.79)	3,340.23	11/1/2016	68.3831	-13.95%	(9.54)	1.55	(11.09)	122.921
12/1/2016	717.847	-4.91%	(35.27)	2.17	(37.44)	1,401.44	12/1/2016	64.7534	-5.31%	(3.44)	1.55	(4.99)	24.8704

2017

1	ICICI BANK							AXIS BANK							HDFC BANK						
2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
3	12/1/2016	225.617						12/1/2016	445.068						12/1/2016	589.345					
4	1/1/2017	237.768	5.39%	12.81	7.88	4.92	24.23	1/1/2017	460.794	3.53%	16.28	10.36	5.92	35.03	1/1/2017	629.843	6.87%	43.28	29.54	13.74	188.80
5	2/1/2017	244.263	2.73%	6.67	7.88	(1.21)	1.46	2/1/2017	500.603	8.64%	43.25	9.82	33.42	1,117.13	2/1/2017	679.885	7.95%	54.02	29.54	24.48	599.16
6	3/1/2017	244.882	0.25%	0.62	7.88	(7.26)	52.70	3/1/2017	485.421	-3.03%	(14.72)	6.48	(21.20)	449.59	3/1/2017	705.873	3.82%	26.98	29.54	(2.56)	6.55
7	4/1/2017	246.119	0.51%	1.24	7.88	(6.64)	44.04	4/1/2017	504.015	3.83%	19.31	8.84	10.47	109.58	4/1/2017	754.74	6.92%	52.25	29.54	22.71	515.76
8	5/1/2017	288.362	17.16%	49.49	7.88	41.61	1,731.61	5/1/2017	508.565	0.90%	4.59	7.53	(2.94)	8.64	5/1/2017	799.374	5.91%	47.27	29.54	17.73	314.48
9	6/1/2017	282.008	-2.20%	(6.21)	7.88	(14.09)	198.64	6/1/2017	510.444	0.37%	1.89	7.95	(6.06)	36.76	6/1/2017	808.624	1.16%	9.36	29.54	(20.18)	407.36
10	7/1/2017	295.834	4.90%	14.50	7.88	6.62	43.88	7/1/2017	513.164	0.53%	2.73	8.96	(6.23)	38.76	7/1/2017	878.586	8.65%	76.02	29.54	46.48	2,159.97
11	8/1/2017	291.621	-1.42%	(4.15)	7.88	(12.03)	144.79	8/1/2017	500.029	-2.56%	(12.80)	10.21	(23.00)	529.16	8/1/2017	874.472	-0.47%	(4.09)	29.54	(33.63)	1,131.28
12	9/1/2017	271.34	-6.95%	(18.87)	7.88	(26.75)	715.58	9/1/2017	508.169	1.63%	8.27	15.96	(7.68)	59.04	9/1/2017	888.292	1.58%	14.04	29.54	(15.50)	240.32
13	10/1/2017	293.874	8.30%	24.41	7.88	16.53	273.09	10/1/2017	522.401	2.80%	14.63	18.52	(3.89)	15.10	10/1/2017	891.124	0.32%	2.84	29.54	(26.70)	712.79
14	11/1/2017	301.565	2.62%	7.89	7.88	0.01	0.00	11/1/2017	535.335	2.48%	13.25	20.46	(7.21)	51.93	11/1/2017	912.432	2.39%	21.82	29.54	(7.72)	59.64
15	12/1/2017	307.64	2.01%	6.20	7.88	(1.68)	2.83	12/1/2017	561.703	4.93%	27.67	27.67	-	-	12/1/2017	923.024	1.16%	10.72	29.54	(18.82)	354.37

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
KOTAK MAHINDRA BANK							FEDERAL BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2016	717.847						12/1/2016	64.7534					
1/1/2017	771.257	7.44%	57.38	26.25	31.14	969.44	1/1/2017	73.6098	13.68%	10.07	4.13	5.94	35.2398
2/1/2017	799.659	3.68%	29.45	26.25	3.20	10.23	2/1/2017	84.5472	14.86%	12.56	4.13	8.43	71.1082
3/1/2017	870.64	8.88%	77.28	26.25	51.03	2,604.21	3/1/2017	88.4189	4.58%	4.05	4.13	(0.08)	0.00657
4/1/2017	900.091	3.38%	30.45	26.25	4.20	17.61	4/1/2017	104.002	17.62%	18.33	4.13	14.20	201.637
5/1/2017	962.886	6.98%	67.18	26.25	40.93	1,674.91	5/1/2017	107.729	3.58%	3.86	4.13	(0.27)	0.0729
6/1/2017	953.851	-0.94%	(8.95)	26.25	(35.20)	1,239.04	6/1/2017	109.181	1.35%	1.47	4.13	(2.66)	7.06798
7/1/2017	1018.04	6.73%	68.51	26.25	42.26	1,786.11	7/1/2017	111.552	2.17%	2.42	4.13	(1.71)	2.9142
8/1/2017	974.927	-4.24%	(41.29)	26.25	(67.54)	4,561.72	8/1/2017	105.814	-5.14%	(5.44)	4.13	(9.57)	91.6317
9/1/2017	1000.85	2.66%	26.61	26.25	0.36	0.13	9/1/2017	109.864	3.83%	4.20	4.13	0.07	0.00549
10/1/2017	1023.48	2.26%	23.14	26.25	(3.11)	9.69	10/1/2017	118.84	8.17%	9.71	4.13	5.58	31.1348
11/1/2017	999.151	-2.38%	(23.75)	26.25	(50.00)	2,499.64	11/1/2017	107.961	-9.15%	(9.88)	4.13	(14.01)	196.368
12/1/2017	1008.04	0.89%	8.97	26.25	(17.28)	298.61	12/1/2017	106.156	-1.67%	(1.77)	4.13	(5.90)	34.8675

2018

ICICI BANK							AXIS BANK							HDFC BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2017	307.64						12/1/2017	561.703						12/1/2017	923.024					
1/1/2018	345.801	12.40%	42.89	7.06	35.83	1,283.81	1/1/2018	592.664	5.51%	32.67	8.16	24.51	600.75	1/1/2018	988.449	7.09%	70.06	13.84	56.22	3,161.06
2/1/2018	307.15	-11.18%	(34.33)	7.06	(41.39)	1,713.20	2/1/2018	528.943	-10.75%	(56.87)	8.16	(65.03)	4,228.89	2/1/2018	928.074	-6.11%	(56.69)	13.84	(70.53)	4,974.16
3/1/2018	272.761	-11.20%	(30.54)	7.06	(37.60)	1,413.67	3/1/2018	508.768	-3.81%	(19.41)	8.16	(27.57)	759.85	3/1/2018	931.843	0.41%	3.78	13.84	(10.06)	101.12
4/1/2018	278.688	2.17%	6.06	7.06	(1.00)	1.01	4/1/2018	517.407	1.70%	8.79	8.16	0.63	0.39	4/1/2018	958.028	2.81%	26.92	13.84	13.08	171.11
5/1/2018	279.815	0.40%	1.13	7.06	(5.93)	35.15	5/1/2018	542.626	4.87%	26.45	8.16	18.29	334.45	5/1/2018	1052.4	9.85%	103.66	13.84	89.82	8,068.46
6/1/2018	269.92	-3.54%	(9.55)	7.06	(16.61)	275.74	6/1/2018	509.767	-6.06%	(30.87)	8.16	(39.03)	1,523.29	6/1/2018	1045.19	-0.68%	(7.16)	13.84	(21.00)	440.83
7/1/2018	297.793	10.33%	30.75	7.06	23.69	561.32	7/1/2018	549.418	7.78%	42.73	8.16	34.57	1,195.42	7/1/2018	1081.39	3.46%	37.45	13.84	23.61	557.31
8/1/2018	339.466	13.99%	47.50	7.06	40.44	1,635.73	8/1/2018	648.395	18.01%	116.81	8.16	108.65	11,804.33	8/1/2018	1022.48	-5.45%	(55.69)	13.84	(69.53)	4,834.97
9/1/2018	303.517	-10.59%	(32.14)	7.06	(39.20)	1,536.79	9/1/2018	611.591	-5.68%	(34.72)	8.16	(42.88)	1,838.29	9/1/2018	994.42	-2.74%	(27.29)	13.84	(41.13)	1,691.89
10/1/2018	353.374	16.43%	58.05	7.06	50.99	2,599.57	10/1/2018	581.178	-4.97%	(28.90)	8.16	(37.06)	1,373.43	10/1/2018	947.913	-4.68%	(44.33)	13.84	(58.17)	3,383.98
11/1/2018	353.274	-0.03%	(0.10)	7.06	(7.16)	51.26	11/1/2018	624.974	7.54%	47.10	8.16	38.94	1,516.00	11/1/2018	1049.7	10.74%	112.72	13.84	98.88	9,777.28
12/1/2018	358.25	1.41%	5.05	7.06	(2.01)	4.06	12/1/2018	619.031	-0.95%	(5.89)	8.16	(14.05)	197.30	12/1/2018	1052.33	0.25%	2.63	13.84	(11.21)	125.56

KOTAK MAHINDRA BANK							FEDERAL BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2017	1008.04						12/1/2017	106.156					
1/1/2018	1108.59	9.97%	110.57	27.14	83.44	6,961.81	1/1/2018	98.0089	-7.67%	(7.52)	(0.41)	(7.11)	50.6152
2/1/2018	1087.61	-1.89%	(20.58)	27.14	(47.72)	2,277.30	2/1/2018	91.9596	-6.17%	(5.68)	0.41	(6.09)	37.0387
3/1/2018	1047.5	-3.69%	(38.63)	27.14	(65.77)	4,325.54	3/1/2018	87.1787	-5.20%	(4.53)	0.41	(4.94)	24.427
4/1/2018	1209.08	15.43%	186.50	27.14	159.36	25,397.13	4/1/2018	95.9599	10.07%	9.67	0.41	9.26	85.6699
5/1/2018	1335.6	10.46%	139.76	27.14	112.62	12,682.33	5/1/2018	82.8368	-13.68%	(11.33)	0.41	(11.74)	137.792
6/1/2018	1340.39	0.36%	4.81	27.14	(22.33)	498.53	6/1/2018	79.8121	-3.65%	(2.91)	0.41	(3.32)	11.0504
7/1/2018	1307.98	-2.42%	(31.63)	27.14	(58.77)	3,454.17	7/1/2018	87.0811	9.11%	7.93	0.41	7.52	56.565
8/1/2018	1284.66	-1.78%	(22.90)	27.14	(50.04)	2,504.38	8/1/2018	79.0804	-9.19%	(7.27)	0.41	(7.68)	58.9154
9/1/2018	1142.88	-11.04%	(126.13)	27.14	(153.27)	23,490.95	9/1/2018	69.778	-11.76%	(8.21)	0.41	(8.62)	74.2722
10/1/2018	1117.4	-2.23%	(24.92)	27.14	(52.06)	2,710.02	10/1/2018	81.6215	16.97%	13.85	0.41	13.44	180.733
11/1/2018	1231.69	10.23%	125.98	27.14	98.84	9,768.92	11/1/2018	84.1876	3.14%	2.65	0.41	2.24	5.00317
12/1/2018	1254.07	1.82%	22.79	27.14	(4.35)	18.88	12/1/2018	91.9352	9.20%	8.46	0.41	8.05	64.8124

2019

ICICI BANK							AXIS BANK							HDFC BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2018	358.25						12/1/2018	619.031						12/1/2018	1052.33					
1/1/2019	362.479	1.18%	4.28	16.68	(12.40)	153.88	1/1/2019	722.053	16.64%	120.17	15.66	104.51	10,921.87	1/1/2019	1031.85	-1.95%	(20.08)	21.33	(41.40)	1,714.31
2/1/2019	347.104	-4.24%	(14.72)	16.68	(31.40)	986.13	2/1/2019	708.47	-1.88%	(13.33)	15.66	(28.99)	840.28	2/1/2019	1032.35	0.05%	0.50	21.33	(20.83)	434.05
3/1/2019	396.911	14.35%	56.95	16.68	40.27	1,621.96	3/1/2019	775.137	9.41%	72.94	15.66	57.28	3,281.06	3/1/2019	1148.54	11.26%	129.27	21.33	107.94	11,651.20
4/1/2019	405.768	2.23%	9.05	16.68	(7.63)	58.15	4/1/2019	765.949	-1.19%	(9.08)	15.66	(24.74)	612.05	4/1/2019	1148.05	-0.04%	(0.50)	21.33	(21.83)	476.36
5/1/2019	421.342	3.84%	16.17	16.68	(0.51)	0.26	5/1/2019	807.497	5.42%	43.80	15.66	28.14	791.98	5/1/2019	1202.29	4.72%	56.80	21.33	35.47	1,258.43
6/1/2019	435.124	3.27%	14.23	16.68	(2.45)	5.99	6/1/2019	806.648	-0.11%	(0.85)	15.66	(16.51)	272.52	6/1/2019	1212.95	0.89%	10.75	21.33	(10.58)	111.85
7/1/2019	422.436	-2.92%	(12.32)	16.68	(29.00)	840.89	7/1/2019	673.564	-16.50%	(111.13)	15.66	(126.79)	16,075.14	7/1/2019	1123.4	-7.38%	(82.94)	21.33	(104.27)	10,871.64
8/1/2019	410.4	-2.85%	(11.69)	16.68	(28.37)	805.05	8/1/2019	663.75	-1.46%	(9.67)	15.66	(25.33)	641.64	8/1/2019	1111.98	-1.02%	(11.31)	21.33	(32.64)	1,065.27
9/1/2019	433.4	5.60%	24.29	16.68	7.61	57.90	9/1/2019	684.65	3.15%	21.56	15.66	5.90	34.79	9/1/2019	1227.35	10.38%	127.35	21.33	106.02	11,239.29
10/1/2019	462.85	6.80%	31.45	16.68	14.77	218.19	10/1/2019	736	7.50%	55.20	15.66	39.54	1,563.52	10/1/2019	1229.95	0.21%	2.61	21.33	(18.72)	350.61
11/1/2019	511.95	10.61%	54.31	16.68	37.63	1,415.91	11/1/2019	739.5	0.48%	3.52	15.66	(12.14)	147.46	11/1/2019	1274.25	3.60%	45.90	21.33	24.57	603.47
12/1/2019	538.75	5.23%	28.20	16.68	11.52	132.78	12/1/2019	754	1.96%	14.78	15.66	(0.88)	0.77	12/1/2019	1271.8	-0.19%	(2.45)	21.33	(23.78)	565.26

KOTAK MAHINDRA BANK							FEDERAL BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2018	1254.07						12/1/2018	91.9352					
1/1/2019	1252.57	-0.12%	(1.50)	42.09	(43.59)	1,900.08	1/1/2019	84.9278	-7.62%	(6.47)	0.45	(6.92)	47.927
2/1/2019	1211.8	-3.26%	(39.45)	42.09	(81.54)	6,648.86	2/1/2019	82.9539	-2.32%	(1.93)	0.45	(2.38)	5.65506
3/1/2019	1335.03	10.17%	135.77	42.09	93.68	8,775.17	3/1/2019	95.1428	14.69%	13.98	0.45	13.53	183.059
4/1/2019	1386.3	3.84%	53.24	42.09	11.15	124.36	4/1/2019	91.4417	-3.89%	(3.56)	0.45	(4.01)	16.057
5/1/2019	1518.88	9.56%	145.26	42.09	103.17	10,643.52	5/1/2019	105.753	15.65%	16.55	0.45	16.10	259.229
6/1/2019	1475.8	-2.84%	(41.86)	42.09	(83.95)	7,046.78	6/1/2019	106.888	1.07%	1.15	0.45	0.70	0.48608
7/1/2019	1518.28	2.88%	43.70	42.09	1.61	2.59	7/1/2019	91.195	-14.68%	(13.39)	0.45	(13.84)	191.511
8/1/2019	1431.7	-5.70%	(81.64)	42.09	(123.73)	15,310.19	8/1/2019	83	-8.99%	(7.46)	0.45	(7.91)	62.5452
9/1/2019	1644.35	14.85%	244.23	42.09	202.14	40,862.55	9/1/2019	90.4	8.92%	8.06	0.45	7.61	57.9085
10/1/2019	1573.15	-4.33%	(68.12)	42.09	(110.21)	12,145.59	10/1/2019	83.75	-7.36%	(6.16)	0.45	(6.61)	43.7029
11/1/2019	1614.4	2.62%	42.33	42.09	0.24	0.06	11/1/2019	88.9	6.15%	5.47	0.45	5.02	25.1672
12/1/2019	1684.5	4.34%	73.14	42.09	31.05	964.34	12/1/2019	88.05	-0.96%	(0.84)	0.45	(1.29)	1.66893

2020

ICICI BANK							AXIS BANK							HDFC BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
1/1/2020	525.55						12/1/2019	754						12/1/2019	1271.8					
2/1/2020	496.05	-5.61%	(27.84)	11.47	(39.31)	1,545.55	1/1/2020	729.35	-3.27%	(23.84)	7.69	(31.53)	994.23	1/1/2020	1225.7	-3.62%	(44.43)	30.57	(75.00)	5,624.98
3/1/2020	324.5	-34.58%	(112.22)	11.47	(123.69)	15,299.84	2/1/2020	696.75	-4.47%	(31.14)	7.69	(38.83)	1,507.99	2/1/2020	1177.6	-3.92%	(46.21)	30.57	(76.78)	5,895.54
4/1/2020	379.9	17.07%	64.86	11.47	53.39	2,850.29	3/1/2020	379.3	-45.56%	(172.81)	7.69	(180.50)	32,582.02	3/1/2020	862	-26.80%	(231.02)	30.57	(261.59)	68,428.45
5/1/2020	332.1	-12.58%	(41.79)	11.47	(53.26)	2,836.17	4/1/2020	444.6	17.22%	76.54	7.69	68.85	4,740.60	4/1/2020	1001.75	16.21%	162.41	30.57	131.84	17,380.91
6/1/2020	351.45	5.83%	20.48	11.47	9.01	81.13	5/1/2020	383.2	-13.81%	(52.92)	7.69	(60.61)	3,673.64	5/1/2020	951.25	-5.04%	(47.95)	30.57	(78.52)	6,166.05
7/1/2020	346.9	-1.29%	(4.49)	11.47	(15.96)	254.76	6/1/2020	406.5	6.08%	24.72	7.69	17.03	289.91	6/1/2020	1065.7	12.03%	128.22	30.57	97.65	9,535.53
8/1/2020	395	13.87%	54.77	11.47	43.30	1,874.84	7/1/2020	431.6	6.17%	26.65	7.69	18.96	359.48	7/1/2020	1032.65	-3.10%	(32.02)	30.57	(62.59)	3,918.13
9/1/2020	354.9	-10.15%	(36.03)	11.47	(47.50)	2,256.16	8/1/2020	496.95	15.14%	75.24	7.69	67.55	4,563.66	8/1/2020	1115.2	7.99%	89.15	30.57	58.58	3,431.49
10/1/2020	392.55	10.61%	41.64	11.47	30.17	910.48	9/1/2020	424.5	-14.58%	(61.89)	7.69	(69.58)	4,841.04	9/1/2020	1079.2	-3.23%	(34.84)	30.57	(65.41)	4,278.19
11/1/2020	472.8	20.44%	96.66	11.47	85.19	7,256.61	10/1/2020	492.4	16.00%	78.76	7.69	71.07	5,051.06	10/1/2020	1183.45	9.66%	114.32	30.57	83.75	7,014.14
12/1/2020	534.8	13.11%	70.13	11.47	58.66	3,441.03	11/1/2020	602.1	22.28%	134.14	7.69	126.45	15,989.51	11/1/2020	1440.7	21.74%	313.17	30.57	282.60	79,862.30
							12/1/2020	620.35	3.03%	18.80	7.69	11.11	123.50	12/1/2020	1436.75	-0.27%	(3.94)	30.57	(34.51)	1,190.88

KOTAK MAHINDRA BANK						FEDERAL BANK							
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2019	1684.5						12/1/2019	88.05					
1/1/2020	1691.05	0.39%	6.58	47.54	(40.96)	1,677.94	1/1/2020	91.2	3.58%	3.26	0.78	2.48	6.17
2/1/2020	1619.65	-4.22%	(68.39)	47.54	(115.93)	13,438.69	2/1/2020	85.85	-5.87%	(5.04)	0.78	(5.82)	33.83
3/1/2020	1296.35	-19.96%	(258.77)	47.54	(306.31)	93,823.23	3/1/2020	41.05	-52.18%	(21.42)	0.78	(22.20)	492.91
4/1/2020	1356.95	4.67%	63.43	47.54	15.89	252.58	4/1/2020	48.8	18.88%	9.21	0.78	8.43	71.12
5/1/2020	1223.7	-9.82%	(120.17)	47.54	(167.71)	28,125.00	5/1/2020	44.95	-7.89%	(3.55)	0.78	(4.33)	18.72
6/1/2020	1359.8	11.12%	151.24	47.54	103.70	10,753.10	6/1/2020	51	13.46%	6.86	0.78	6.08	37.02
7/1/2020	1367.45	0.56%	7.69	47.54	(39.85)	1,587.79	7/1/2020	53.85	5.59%	3.01	0.78	2.23	4.97
8/1/2020	1402.15	2.54%	35.58	47.54	(11.96)	143.03	8/1/2020	55.3	2.69%	1.49	0.78	0.71	0.50
9/1/2020	1268.15	-9.56%	(121.19)	47.54	(168.73)	28,471.15	9/1/2020	48.55	-12.21%	(5.93)	0.78	(6.71)	44.97
10/1/2020	1547.6	22.04%	341.03	47.54	293.49	86,136.17	10/1/2020	50.5	4.02%	2.03	0.78	1.25	1.56
11/1/2020	1901.65	22.88%	435.05	47.54	387.51	150,161.95	11/1/2020	62.75	24.26%	15.22	0.78	14.44	208.56
12/1/2020	1995.4	4.93%	98.37	47.54	50.83	2,583.87	12/1/2020	66.7	6.29%	4.20	0.78	3.42	11.69

Public Sector Banks - 2016

SBI BANK							INDIAN BANK							CANARA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2015	219.505						12/1/2015	110.15						12/1/2015	226.627					
1/1/2016	176.025	-19.81%	(34.87)	4.43	(39.30)	1,544.31	1/1/2016	86.8699	-21.13%	(18.36)	15.31	(33.67)		1/1/2016	188.169	-16.97%	(31.93)	5.79	(37.72)	1,423.01
2/1/2016	154.945	-11.98%	(18.56)	4.43	(22.99)	528.33	2/1/2016	73.2264	-15.71%	(11.50)	15.31	(26.81)	718.81	2/1/2016	153.784	-18.27%	(28.10)	5.79	(33.89)	1,148.62
3/1/2016	190.062	22.66%	43.08	4.43	38.65	1,493.50	3/1/2016	99.8932	36.42%	36.38	15.31	21.07	443.86	3/1/2016	184.144	19.74%	36.35	5.79	30.56	934.07
4/1/2016	184.828	-2.75%	(5.09)	4.43	(9.52)	90.62	4/1/2016	93.2146	-6.69%	(6.23)	15.31	(21.54)	464.06	4/1/2016	199.808	8.51%	17.00	5.79	11.21	125.60
5/1/2016	200.381	8.41%	16.86	4.43	12.43	154.55	5/1/2016	87.2038	-6.45%	(5.62)	15.31	(20.93)	438.20	5/1/2016	199.372	-0.22%	(0.44)	5.79	(6.23)	38.76
6/1/2016	213.88	6.74%	14.41	4.43	9.98	99.57	6/1/2016	134.67	54.43%	73.30	15.31	57.99	3,363.09	6/1/2016	211.884	6.28%	13.30	5.79	7.51	56.36
7/1/2016	226.996	6.13%	13.92	4.43	9.49	90.07	7/1/2016	152.872	13.52%	20.66	15.31	5.35	28.65	7/1/2016	243.65	14.99%	36.53	5.79	30.74	944.82
8/1/2016	250.286	10.26%	25.68	4.43	21.25	451.51	8/1/2016	216.645	41.72%	90.38	15.31	75.07	5,635.08	8/1/2016	271.875	11.58%	31.50	5.79	25.71	660.75
9/1/2016	248.452	-0.73%	(1.82)	4.43	(6.25)	39.06	9/1/2016	203.572	-6.03%	(12.28)	15.31	(27.59)	761.44	9/1/2016	299.082	10.01%	29.93	5.79	24.14	582.72
10/1/2016	255.538	2.85%	7.29	4.43	2.86	8.17	10/1/2016	220.939	8.53%	18.85	15.31	3.54	12.52	10/1/2016	304.271	1.74%	5.28	5.79	(0.51)	0.26
11/1/2016	256.083	0.21%	0.55	4.43	(3.88)	15.08	11/1/2016	243.563	10.24%	24.94	15.31	9.63	92.76	11/1/2016	308.636	1.43%	4.43	5.79	(1.36)	1.86
12/1/2016	247.511	-3.35%	(8.29)	4.43	(12.72)	161.68	12/1/2016	212.931	-12.58%	(26.78)	15.31	(42.09)	1,771.55	12/1/2016	254.949	-17.39%	(44.35)	5.79	(50.14)	2,513.79

PUNJAB BANK							BARODA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2015	115.65						12/1/2015	155.625					
1/1/2016	91.15	-21.18%	(19.31)	2.52	(21.83)	476.55	1/1/2016	124.897	-19.74%	(24.66)	0.86	(25.52)	651.094
2/1/2016	71.3	-21.78%	(15.53)	2.52	(18.05)	325.70	2/1/2016	131.053	4.93%	6.46	0.86	5.60	31.3476
3/1/2016	84.7	18.79%	15.92	2.52	13.40	179.52	3/1/2016	146.045	11.44%	16.71	0.86	15.85	251.115
4/1/2016	87.1	2.83%	2.47	2.52	(0.05)	0.00	4/1/2016	156.866	7.41%	11.62	0.86	10.76	115.857
5/1/2016	79.1	-9.18%	(7.27)	2.52	(9.79)	95.75	5/1/2016	141.676	-9.68%	(13.72)	0.86	(14.58)	212.555
6/1/2016	105.8	33.75%	35.71	2.52	33.19	1,101.74	6/1/2016	152.895	7.92%	12.11	0.86	11.25	126.502
7/1/2016	123.45	16.68%	20.59	2.52	18.07	326.69	7/1/2016	151.108	-1.17%	(1.77)	0.86	(2.63)	6.89696
8/1/2016	127.4	3.20%	4.08	2.52	1.56	2.42	8/1/2016	161.682	7.00%	11.31	0.86	10.45	109.275
9/1/2016	140.65	10.40%	14.63	2.52	12.11	146.60	9/1/2016	166.1	2.73%	4.54	0.86	3.68	13.5335
10/1/2016	143.9	2.31%	3.33	2.52	0.81	0.65	10/1/2016	154.732	-6.84%	(10.59)	0.86	(11.45)	131.099
11/1/2016	138.2	-3.96%	(5.47)	2.52	(7.99)	63.91	11/1/2016	163.072	5.39%	8.79	0.86	7.93	62.8725
12/1/2016	115.6	-16.35%	(18.90)	2.52	(21.42)	459.00	12/1/2016	151.753	-6.94%	(10.53)	0.86	(11.39)	129.792

2017

SBI BANK							INDIAN BANK							CANARA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2016	247.511						12/1/2016	212.931						12/1/2016	254.949					
1/1/2017	257.669	4.10%	10.58	7.38	3.19	10.19	1/1/2017	261.074	22.61%	59.03	18.18	40.85	1,668.80	1/1/2017	275.997	8.26%	22.79	13.51	9.27	86.01
2/1/2017	266.786	3.54%	9.44	7.38	2.06	4.24	2/1/2017	275.739	5.62%	15.49	18.18	(2.69)	7.24	2/1/2017	294.42	6.68%	19.65	13.51	6.14	37.73
3/1/2017	289.977	8.69%	25.21	7.38	17.83	317.77	3/1/2017	269.661	-2.20%	(5.94)	18.18	(24.12)	581.98	3/1/2017	302.148	2.62%	7.93	13.51	(5.58)	31.12
4/1/2017	286.855	-1.08%	(3.09)	7.38	(10.47)	109.58	4/1/2017	307.24	13.94%	42.82	18.18	24.64	606.92	4/1/2017	353.753	17.08%	60.42	13.51	46.91	2,200.38
5/1/2017	285.963	-0.31%	(0.89)	7.38	(8.27)	68.38	5/1/2017	304.876	-0.77%	(2.35)	18.18	(20.53)	421.30	5/1/2017	349.764	-1.13%	(3.94)	13.51	(17.45)	304.63
6/1/2017	273.6	-4.32%	(11.83)	7.38	(19.21)	368.97	6/1/2017	271.253	-11.03%	(29.92)	18.18	(48.10)	2,313.14	6/1/2017	328.075	-6.20%	(20.34)	13.51	(33.85)	1,146.09
7/1/2017	312.55	14.24%	44.49	7.38	37.11	1,377.52	7/1/2017	307.553	13.38%	41.16	18.18	22.98	527.97	7/1/2017	367.065	11.88%	43.62	13.51	30.11	906.85
8/1/2017	277.35	-11.26%	(31.24)	7.38	(38.62)	1,491.17	8/1/2017	281.6	-8.44%	(23.76)	18.18	(41.94)	1,759.21	8/1/2017	339.2	-7.59%	(25.75)	13.51	(39.26)	1,541.35
9/1/2017	253.75	-8.51%	(21.59)	7.38	(28.97)	839.37	9/1/2017	256.187	-9.02%	(23.12)	18.18	(41.30)	1,705.61	9/1/2017	308.05	-9.18%	(28.29)	13.51	(41.80)	1,747.19
10/1/2017	305.8	20.51%	62.73	7.38	55.35	3,063.25	10/1/2017	309.715	20.89%	64.71	18.18	46.53	2,165.25	10/1/2017	404.75	31.39%	127.06	13.51	113.55	12,892.50
11/1/2017	320.45	4.79%	15.35	7.38	7.97	63.55	11/1/2017	386.051	24.65%	95.15	18.18	76.97	5,924.30	11/1/2017	373.4	-7.75%	(28.92)	13.51	(42.43)	1,800.46
12/1/2017	309.5	-3.42%	(10.58)	7.38	(17.96)	322.41	12/1/2017	370.272	-4.09%	(15.13)	18.18	(33.31)	1,109.78	12/1/2017	360.9	-3.35%	(12.08)	13.51	(25.59)	654.93

PUNJAB BANK							BARODA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2016	115.6						12/1/2017	160.5					
1/1/2017	135.95	17.60%	23.93	9.30	14.63	214.02	1/1/2018	156.95	-2.21%	(3.47)	0.19	(3.66)	13.3991
2/1/2017	141.35	3.97%	5.61	9.30	(3.69)	13.58	2/1/2018	142	-9.53%	(13.53)	0.19	(13.72)	188.128
3/1/2017	150.7	6.61%	9.97	9.30	0.67	0.45	3/1/2018	142.2	0.14%	0.20	0.19	0.01	0.00011
4/1/2017	168.9	12.08%	20.40	9.30	11.10	123.17	4/1/2018	148.65	4.54%	6.74	0.19	6.55	42.936
5/1/2017	150.1	-11.13%	(16.71)	9.30	(26.01)	676.38	5/1/2018	137.05	-7.80%	(10.69)	0.19	(10.88)	118.478
6/1/2017	137.15	-8.63%	(11.83)	9.30	(21.13)	446.59	6/1/2018	112.8	-17.69%	(19.96)	0.19	(20.15)	405.988
7/1/2017	162.2	18.26%	29.63	9.30	20.33	413.12	7/1/2018	153.45	36.04%	55.30	0.19	55.11	3037.02
8/1/2017	143.7	-11.41%	(16.39)	9.30	(25.69)	659.97	8/1/2018	152.9	-0.36%	(0.55)	0.19	(0.74)	0.54469
9/1/2017	129.05	-10.19%	(13.16)	9.30	(22.46)	504.29	9/1/2018	99.4	-34.99%	(34.78)	0.19	(34.97)	1222.92
10/1/2017	196.7	52.42%	103.11	9.30	93.81	8,800.91	10/1/2018	110.8	11.47%	12.71	0.19	12.52	156.686
11/1/2017	176.15	-10.45%	(18.40)	9.30	(27.70)	767.46	11/1/2018	104.7	-5.51%	(5.76)	0.19	(5.95)	35.4522
12/1/2017	171.5	-2.64%	(4.53)	9.30	(13.83)	191.19	12/1/2018	118.85	13.51%	16.06	0.19	15.87	251.931

2018

SBI BANK							INDIAN BANK							CANARA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2017	309.5						12/1/2017	370.272						12/1/2017	360.9					
1/1/2018	312.75	1.05%	3.28	0.76	2.52	6.36	1/1/2018	355.87	-3.89%	(13.84)	(6.29)	(7.55)	56.96	1/1/2018	341.25	-5.44%	(18.58)	(3.96)	(14.62)	213.79
2/1/2018	268.75	-14.07%	(37.81)	0.76	(38.57)	1,487.63	2/1/2018	325.395	-8.56%	(27.87)	(6.29)	(21.58)	465.50	2/1/2018	299.3	-12.29%	(36.79)	(3.96)	(32.83)	1,078.01
3/1/2018	250.1	-6.94%	(17.36)	0.76	(18.12)	328.18	3/1/2018	294.33	-9.55%	(28.10)	(6.29)	(21.81)	475.64	3/1/2018	264.25	-11.71%	(30.95)	(3.96)	(26.99)	728.21
4/1/2018	246.3	-1.52%	(3.74)	0.76	(4.50)	20.27	4/1/2018	315.958	7.35%	23.22	(6.29)	29.51	870.65	4/1/2018	265.8	0.59%	1.56	(3.96)	5.52	30.46
5/1/2018	269.2	9.30%	25.03	0.76	24.27	588.99	5/1/2018	333.899	5.68%	18.96	(6.29)	25.25	637.55	5/1/2018	257.2	-3.24%	(8.32)	(3.96)	(4.36)	19.02
6/1/2018	259.3	-3.68%	(9.54)	0.76	(10.30)	106.01	6/1/2018	337.536	1.09%	3.68	(6.29)	9.97	99.34	6/1/2018	251.6	-2.18%	(5.48)	(3.96)	(1.52)	2.30
7/1/2018	293.4	13.15%	38.58	0.76	37.82	1,430.69	7/1/2018	358.2	6.12%	21.93	(6.29)	28.22	796.30	7/1/2018	284.45	13.06%	37.14	(3.96)	41.10	1,689.13
8/1/2018	308.85	5.27%	16.26	0.76	15.50	240.36	8/1/2018	331.95	-7.33%	(24.33)	(6.29)	(18.04)	325.31	8/1/2018	284.15	-0.11%	(0.30)	(3.96)	3.66	13.40
9/1/2018	265	-14.20%	(37.62)	0.76	(38.38)	1,473.35	9/1/2018	227.15	-31.57%	(71.71)	(6.29)	(65.42)	4,280.24	9/1/2018	220.85	-22.28%	(49.20)	(3.96)	(45.24)	2,046.54
10/1/2018	280.5	5.85%	16.41	0.76	15.65	244.82	10/1/2018	252.5	11.16%	28.18	(6.29)	34.47	1,188.12	10/1/2018	261.95	18.61%	48.75	(3.96)	52.71	2,778.21
11/1/2018	284.35	1.37%	3.90	0.76	3.14	9.88	11/1/2018	229.3	-9.19%	(21.07)	(6.29)	(14.78)	218.40	11/1/2018	255.65	-2.41%	(6.15)	(3.96)	(2.19)	4.79
12/1/2018	295.65	3.97%	11.75	0.76	10.99	120.76	12/1/2018	243.8	6.32%	15.42	(6.29)	21.71	471.19	12/1/2018	275	7.57%	20.81	(3.96)	24.77	613.78

PUNJAB BANK							BARODA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2017	171.5						12/1/2017	160.5					
1/1/2018	171.25	-0.15%	(0.25)	(3.96)	3.71	13.78	1/1/2018	156.95	-2.21%	(3.47)	0.19	(3.66)	13.3991
2/1/2018	101.35	-40.82%	(41.37)	(3.96)	(37.41)	1,399.40	2/1/2018	142	-9.53%	(13.53)	0.19	(13.72)	188.128
3/1/2018	95.45	-5.82%	(5.56)	(3.96)	(1.60)	2.55	3/1/2018	142.2	0.14%	0.20	0.19	0.01	0.00011
4/1/2018	95.2	-0.26%	(0.25)	(3.96)	3.71	13.77	4/1/2018	148.65	4.54%	6.74	0.19	6.55	42.936
5/1/2018	83.6	-12.18%	(10.19)	(3.96)	(6.23)	38.77	5/1/2018	137.05	-7.80%	(10.69)	0.19	(10.88)	118.478
6/1/2018	75.95	-9.15%	(6.95)	(3.96)	(2.99)	8.94	6/1/2018	112.8	-17.69%	(19.96)	0.19	(20.15)	405.988
7/1/2018	85.15	12.11%	10.31	(3.96)	14.27	203.76	7/1/2018	153.45	36.04%	55.30	0.19	55.11	3037.02
8/1/2018	88.15	3.52%	3.11	(3.96)	7.07	49.92	8/1/2018	152.9	-0.36%	(0.55)	0.19	(0.74)	0.54469
9/1/2018	59.75	-32.22%	(19.25)	(3.96)	(15.29)	233.79	9/1/2018	99.4	-34.99%	(34.78)	0.19	(34.97)	1222.92
10/1/2018	73.75	23.43%	17.28	(3.96)	21.24	451.15	10/1/2018	110.8	11.47%	12.71	0.19	12.52	156.686
11/1/2018	69.75	-5.42%	(3.78)	(3.96)	0.18	0.03	11/1/2018	104.7	-5.51%	(5.76)	0.19	(5.95)	35.4522
12/1/2018	78.1	11.97%	9.35	(3.96)	13.31	177.15	12/1/2018	118.85	13.51%	16.06	0.19	15.87	251.931

2019

SBI BANK						INDIAN BANK						CANARA BANK								
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2018	295.65						12/1/2018	243.8						12/1/2018	275					
1/1/2019	293.35	-0.78%	(2.28)	6.49	(8.77)	76.92	1/1/2019	226	-7.30%	(16.50)	(5.47)	(11.03)	121.64	1/1/2019	250.05	-9.07%	(22.69)	(0.70)	(21.99)	483.44
2/1/2019	269.75	-8.04%	(21.70)	6.49	(28.19)	794.75	2/1/2019	224.25	-0.77%	(1.74)	(5.47)	3.73	13.94	2/1/2019	231.5	-7.42%	(17.17)	(0.70)	(16.47)	271.39
3/1/2019	320.8	18.92%	60.71	6.49	54.22	2,939.93	3/1/2019	278.5	24.19%	67.37	(5.47)	72.84	5,306.25	3/1/2019	291.95	26.11%	76.23	(0.70)	76.93	5,918.98
4/1/2019	310.2	-3.30%	(10.25)	6.49	(16.74)	280.22	4/1/2019	252.35	-9.39%	(23.69)	(5.47)	(18.22)	332.14	4/1/2019	260.3	-10.84%	(28.22)	(0.70)	(27.52)	757.29
5/1/2019	352.55	13.65%	48.13	6.49	41.64	1,734.04	5/1/2019	276.55	9.59%	26.52	(5.47)	31.99	1,023.41	5/1/2019	267.6	2.80%	7.50	(0.70)	8.20	67.32
6/1/2019	360.9	2.37%	8.55	6.49	2.06	4.23	6/1/2019	260.55	-5.79%	(15.07)	(5.47)	(9.60)	92.24	6/1/2019	284.4	6.28%	17.85	(0.70)	18.55	344.28
7/1/2019	332.05	-7.99%	(26.54)	6.49	(33.03)	1,091.23	7/1/2019	186.1	-28.57%	(53.18)	(5.47)	(47.71)	2,275.91	7/1/2019	236.3	-16.91%	(39.96)	(0.70)	(39.26)	1,541.74
8/1/2019	273.7	-17.57%	(48.10)	6.49	(54.59)	2,979.67	8/1/2019	200.2	7.58%	15.17	(5.47)	20.64	425.94	8/1/2019	220.55	-6.67%	(14.70)	(0.70)	(14.00)	196.01
9/1/2019	270.9	-1.02%	(2.77)	6.49	(9.26)	85.77	9/1/2019	125.15	-37.49%	(46.92)	(5.47)	(41.45)	1,717.74	9/1/2019	182.3	-17.34%	(31.62)	(0.70)	(30.92)	955.82
10/1/2019	312.25	15.26%	47.66	6.49	41.17	1,695.10	10/1/2019	132.85	6.15%	8.17	(5.47)	13.64	186.15	10/1/2019	203.65	11.71%	23.85	(0.70)	24.55	602.72
11/1/2019	341.85	9.48%	32.41	6.49	25.92	671.64	11/1/2019	128.85	-3.01%	(3.88)	(5.47)	1.59	2.53	11/1/2019	227.2	11.56%	26.27	(0.70)	26.97	727.56
12/1/2019	333.7	-2.38%	(7.96)	6.49	(14.45)	208.68	12/1/2019	100.85	-21.73%	(21.92)	(5.47)	(16.45)	270.45	12/1/2019	221.3	-2.60%	(5.75)	(0.70)	(5.05)	25.47

PUNJAB BANK						BARODA BANK							
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2018	78.1						12/1/2018	118.85					
1/1/2019	77.5	-0.77%	(0.60)	(0.22)	(0.38)	0.14	1/1/2019	112.45	-5.38%	(6.05)	0.12	(6.17)	38.0432
2/1/2019	72.3	-6.71%	(4.85)	(0.22)	(4.63)	21.45	2/1/2019	101.05	-10.14%	(10.25)	0.12	(10.37)	107.464
3/1/2019	95.4	31.95%	30.48	(0.22)	30.70	942.52	3/1/2019	128.8	27.46%	35.37	0.12	35.25	1242.46
4/1/2019	84.8	-11.11%	(9.42)	(0.22)	(9.20)	84.68	4/1/2019	116.4	-9.63%	(11.21)	0.12	(11.33)	128.353
5/1/2019	80.65	-4.89%	(3.95)	(0.22)	(3.73)	13.89	5/1/2019	133.25	14.48%	19.29	0.12	19.17	367.665
6/1/2019	79.55	-1.36%	(1.08)	(0.22)	(0.86)	0.75	6/1/2019	121.85	-8.56%	(10.43)	0.12	(10.55)	111.31
7/1/2019	69.15	-13.07%	(9.04)	(0.22)	(8.82)	77.80	7/1/2019	106.65	-12.47%	(13.30)	0.12	(13.42)	180.076
8/1/2019	64.95	-6.07%	(3.94)	(0.22)	(3.72)	13.87	8/1/2019	92.6	-13.17%	(12.20)	0.12	(12.32)	151.67
9/1/2019	61.9	-4.70%	(2.91)	(0.22)	(2.69)	7.22	9/1/2019	93.05	0.49%	0.46	0.12	0.34	0.11286
10/1/2019	65.4	5.65%	3.70	(0.22)	3.92	15.35	10/1/2019	97.2	4.46%	4.34	0.12	4.22	17.7672
11/1/2019	65.65	0.38%	0.25	(0.22)	0.47	0.22	11/1/2019	104.9	7.92%	8.31	0.12	8.19	67.0447
12/1/2019	64.35	-1.98%	(1.27)	(0.22)	(1.05)	1.11	12/1/2019	101.9	-2.86%	(2.91)	0.12	(3.03)	9.20722

2020

SBI BANK							INDIAN BANK							CANARA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
1-Dec-19	333.7						12/1/2019	100.85						12/1/2019	221.3					
1/1/2020	318.55	-4.54%	(14.46)	1.09	(15.55)	241.77	1/1/2020	103.45	2.58%	2.67	2.11	0.56	0.31	1/1/2020	202.5	-8.50%	(17.20)	(3.07)	(14.13)	199.71
2/1/2020	302.9	-4.91%	(14.88)	1.09	(15.97)	255.08	2/1/2020	74.15	-28.32%	(21.00)	2.11	(23.11)	534.14	2/1/2020	144.05	-28.86%	(41.58)	(3.07)	(38.51)	1,482.93
3/1/2020	196.95	-34.98%	(68.89)	1.09	(69.98)	4,897.23	3/1/2020	43.1	-41.87%	(18.05)	2.11	(20.16)	406.34	3/1/2020	90.4	-37.24%	(33.67)	(3.07)	(30.60)	936.27
4/1/2020	190.4	-3.33%	(6.33)	1.09	(7.42)	55.09	4/1/2020	52	20.65%	10.74	2.11	8.63	74.44	4/1/2020	87.9	-2.77%	(2.43)	(3.07)	0.64	0.41
5/1/2020	160.3	-15.81%	(25.34)	1.09	(26.43)	698.63	5/1/2020	43.75	-15.87%	(6.94)	2.11	(9.05)	81.92	5/1/2020	83.75	-4.72%	(3.95)	(3.07)	(0.88)	0.78
6/1/2020	178.4	11.29%	20.14	1.09	19.05	363.04	6/1/2020	62	41.71%	25.86	2.11	23.75	564.20	6/1/2020	100.6	20.12%	20.24	(3.07)	23.31	543.36
7/1/2020	191.45	7.32%	14.00	1.09	12.91	166.79	7/1/2020	58.4	-5.81%	(3.39)	2.11	(5.50)	30.26	7/1/2020	101.8	1.19%	1.21	(3.07)	4.28	18.36
8/1/2020	212.15	10.81%	22.94	1.09	21.85	477.34	8/1/2020	64.9	11.13%	7.22	2.11	5.11	26.15	8/1/2020	107.65	5.75%	6.19	(3.07)	9.26	85.68
9/1/2020	185.4	-12.61%	(23.38)	1.09	(24.47)	598.64	9/1/2020	56.35	-13.17%	(7.42)	2.11	(9.53)	90.89	9/1/2020	88.9	-17.42%	(15.48)	(3.07)	(12.41)	154.11
10/1/2020	189.25	2.08%	3.93	1.09	2.84	8.07	10/1/2020	58	2.93%	1.70	2.11	(0.41)	0.17	10/1/2020	86.2	-3.04%	(2.62)	(3.07)	0.45	0.20
11/1/2020	244.3	29.09%	71.06	1.09	69.97	4,896.25	11/1/2020	67.6	16.55%	11.19	2.11	9.08	82.43	11/1/2020	103.75	20.36%	21.12	(3.07)	24.19	585.31
12/1/2020	274.75	12.46%	34.25	1.09	33.16	1,099.28	12/1/2020	85.55	26.55%	22.72	2.11	20.61	424.62	12/1/2020	128.95	24.29%	31.32	(3.07)	34.39	1,182.73

V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
PUNJAB BANK							BARODA BANK						
Date	Adj Close	Change in	Returns	Average	D	D^2	Date	Adj Close	Change in	Returns	Average	D	D^2
12/1/2019	64.35						12/1/2019	101.9					
1/1/2020	60.5	-5.98%	(3.62)	(1.40)	(2.22)	4.94	1/1/2020	92.7	-9.03%	(8.37)	(1.62)	(6.75)	45.6164
2/1/2020	45.05	-25.54%	(11.50)	(1.40)	(10.10)	102.10	2/1/2020	76.3	-17.69%	(13.50)	-1.62	(11.88)	141.101
3/1/2020	32.35	-28.19%	(9.12)	(1.40)	(7.72)	59.59	3/1/2020	53.55	-29.82%	(15.97)	-1.62	(14.35)	205.829
4/1/2020	32.35	0.00%	-	(1.40)	1.40	1.96	4/1/2020	49.2	-8.12%	(4.00)	-1.62	(2.38)	5.6484
5/1/2020	26.85	-17.00%	(4.56)	(1.40)	(3.16)	10.02	5/1/2020	38.95	-20.83%	(8.11)	-1.62	(6.49)	42.1796
6/1/2020	34.75	29.42%	10.22	(1.40)	11.62	135.13	6/1/2020	48.6	24.78%	12.04	-1.62	13.66	186.618
7/1/2020	31.95	-8.06%	(2.57)	(1.40)	(1.17)	1.38	7/1/2020	46.8	-3.70%	(1.73)	-1.62	(0.11)	0.01284
8/1/2020	35.05	9.70%	3.40	(1.40)	4.80	23.05	8/1/2020	48.95	4.59%	2.25	-1.62	3.87	14.9674
9/1/2020	28.55	-18.54%	(5.29)	(1.40)	(3.89)	15.17	9/1/2020	41.05	-16.14%	(6.63)	-1.62	(5.01)	25.0503
10/1/2020	26.75	-6.30%	(1.69)	(1.40)	(0.29)	0.08	10/1/2020	41.7	1.58%	0.66	-1.62	2.28	5.19974
11/1/2020	33.45	25.05%	8.38	(1.40)	9.78	95.61	11/1/2020	51.35	23.14%	11.88	-1.62	13.50	182.335
12/1/2020	33.05	-1.20%	(0.40)	(1.40)	1.00	1.01	12/1/2020	61.45	19.67%	12.09	-1.62	13.71	187.87

PRIVATE SECTOR BANKS														
ICICI BANK			AXIS BANK			HDFC BANK			KOTAK BANK			FEDERAL BANK		
Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk
2016	10.63	1	2016	16.8	2.11	2016	18.37	1.53	2016	8.96	0.64	2016	6.42	1.32
2017	12.34	1.09	2017	7.54	0.35	2017	22.41	2.62	2017	16.18	1.42	2017	15.8	1.94
2018	6.75	0.71	2018	5.7	0.47	2018	17.9	0.92	2018	13.02	1.06	2018	6.76	0.6
2019	3.82	0.47	2019	8.34	0.52	2019	15.67	1.06	2019	13.45	1.33	2019	9.71	0.83
2020	5.3	0.86	2020	10.18	1.41	2020	13.65	2.04	2020	10.93	1.75	2020	7.29	1.89
AVG	7.768			9.712			17.6			12.508			9.196	
SD	3.598898			4.276531			3.284296			2.725412			3.909927	

PUBLIC SECTOR BANKS														
SBI BANK			INDIAN BANK			CANARA BANK			PNB BANK			BARODA BANK		
Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk	Year	Returns	Risk
2016	6.87	0.01	2016	5.44	2.08	2016	-6.93	0.01	2016	0.55	0.12	2016	0.73	0.06
2017	7.75	0.57	2017	13.7	1.8	2017	5.25	0.02	2017	4.66	0.01	2017	2.81	0.43
2018	-3.03	0.23	2018	6.45	1.01	2018	-10.93	1.14	2018	-17.2	5.18	2018	-4.59	0.7
2019	0.41	0.04	2019	1.61	0.49	2019	1.01	0.13	2019	-22.76	3.03	2019	0.86	0.1
2020	4.59	1.04	2020	2.5	0.64	2020	-3.34	0.99	2020	0.32	0.08	2020	0.4	0.11
avg	3.318			5.94			-2.988			-6.886			0.042	
sd	4.545076			4.777819			6.375486			12.23615			2.75626	

A STUDY ON IMPACT OF RISK ON ITS RETURN OF PUBLIC AND PRIVATE SECTOR BANKS LISTED IN BSE BANKEX

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ABSTRACT

A Banking sector is the backbone of the country's economy and this sector has contributed good returns for the investor in the past. Risk and Return analysis play a very important role in an individual decision-making process. This paper analyzes the risk and return of Public and Private sector banks. The study compares the performance of the 10 listed banks in the BSE from January 2016 to December 2020. As from the data collected and calculated HDFC Bank -Private sector bank gives the highest returns of 22.41% and PNB – Public sector bank gives the negative returns of -22.76%. Risk is higher in case of PNB - Public sector bank i.e 5.18% and lower in case of Axis Bank- Private sector bank i.e 0.35%. From Regression Analysis it is found that only ICIC and Axis bank has a significant relationship between Risk and Returns and rest of the banks has no significant relationship between Risk and Return. In Correlation Analysis 7 banks are positively correlated apart from Canara, Punjab national bank and Bank of Baroda are negatively correlated. Risk is a concept that indicates a negative impact on an asset or some characteristic of value that may result from some present process or future event. The study evaluates the performance of banking mainly to identify the required rate of return and risk-based upon different risk elements prevailing in the market and other economic factors.

Keywords: Return, Risk, BSE, Banking sector, Correlation, Regression

I. INTRODUCTION:

Banks play a very important role in building the economy of an individual as well as a nation. The country's economy, has always played a positive key role in prevention the economic disaster from reaching a horrible situation in the country.

When there is higher risk, there is a greater probability of high return and on the other hand when there is the least risk there is a greater probability of low return. The return is the gain or loss of security in a particular period, return includes interest, dividend, and capital appreciation. The Simple meaning of risk is the probability of loss. It indicates the future niggles about fluctuation from expected earnings or expected outcome. Risk is the chance or probability for certain investments; it may or may not deliver the actual/expected returns.

II. LITERATURE REVIEW:

Suresh , Sai Prakesh (2018) states that the Sector wise portfolio returns are also calculated for the same period, to compare the returns generated by public and private sector banks. Sector wise portfolio returns are also calculated for the same period, to compare the returns generated by public and private sector banks.

Mallikarjunappa. Shaini Naveen (2016) conducted a study on Comparative Analysis of Risk and Return with Reference to Stocks of CNX Bank Nifty. This study analyzes the risk and returns in the banking sector. In this analysis found some stocks move in the opposite direction to the Stock market, some stocks move along with the market, some stocks are less volatile compared to the market and some stocks are more volatile compared to the market.

Muthu Gopalakrisnan, Ramanathan(2013), studied post and prerecession period Indian stock market price fluctuations. The volatility in the market required to estimate the risk on investment. Researcher analyses the selected indexed stock volatility of sectoral in Nifty as on 28-03-2013 daily opening and closing price of 31 selected companies. This analysis helps in identifying volatility relationship during pre and post recession period.

III. RESEARCH METHODOLOGY:

SOURCES OF DATA:

The study is based on secondary data collected from BSE, Yahoo finance, Money control website. Data is collected for 5 years from banking stocks listed in BSE Bankex. Additionally, the data are also collected from websites, journals, books, reports by researchers and scholars.

DURATION OF THE STUDY:

The study covers a period of 5 years (i.e. 1st January 2016 till 31st December 2020 has been considered.

OBJECTIVES OF THE STUDY:

- To indentify Risk and Return of Public and Private banks listed on BSE.
- To identify the correlation between Risk and Return of Public and Private sector Banks.
- To identify the impact of Risk of various bank on its Returns.
- To suggest investors regarding the investments based upon the performance of banking sector.

LIMITATIONS OF THE STUDY:

- The area of study is limited to the stocks of 10 banks listed in BSE BANKEX.
- The study includes 5 Public and 5 Private sector banks.
- The study is confined to a period of five years from 2016 to 2020.
- The accuracy is limited as the data collection was strictly confined to secondary sources.

IV. ANALYTICAL TOOLS

4.1 RETURN ANALYSIS

Table.4.1 Returns of the Public and Private Sector Banks

S.No	Name of the Bank	2016	2017	2018	2019	2020
1.	SBI Bank	6.87	7.75	-3.03	0.41	4.59
2.	Canara Bank	-6.93	5.25	-10.93	1.01	-3.34
3.	Indian Bank	5.44	13.70	6.45	1.61	2.50
4.	Punjab National Bank	0.55	4.66	-17.20	-22.76	0.32
5.	Bank Of Baroda	0.73	2.81	-4.59	0.86	0.40
6.	ICICI Bank	10.63	12.34	6.75	3.82	5.30
7.	AXIS Bank	16.80	7.54	5.70	8.34	10.18
8.	HDFC Bank	18.37	22.41	17.90	15.67	13.65
9.	Kotak Mahindra Bank	8.96	16.18	13.02	13.45	10.93
10.	The Federal Bank	6.42	15.80	6.76	9.71	7.29

INFERENCE:

Above table.4.1 shows the Returns on Equity of Public sector Banks, where Indian Bank gets the highest return of 13.70% for the year 2017 and Punjab National Bank gets the lowest returns of -22.76% for the year 2019. Whereas in Private sector banks where HDFC Bank gets the highest return of 22.41% for the year 2017 and ICIC Bank gets the lowest returns of 3.82% for the year 2019.

4.2 RISK ANALYSIS

Table.4.2 Risk rate of Public and Private Sector Banks

S.NO	Name of the Bank	2016	2017	2018	2019	2020
1.	SBI Bank	0.01	0.57	0.23	0.04	1.04
2.	Canara Bank	0.01	0.02	1.14	0.13	0.99
3.	Indian Bank	2.08	1.80	1.01	0.49	0.64
4.	Punjab National Bank	0.12	0.01	5.18	3.03	0.08
5.	Bank Of Baroda	0.06	0.43	0.70	0.10	0.11
6.	ICICI Bank	1.00	1.09	0.71	0.47	0.86
7.	AXIS Bank	2.11	0.35	0.47	0.52	1.41
8.	HDFC Bank	1.53	2.62	0.92	1.06	2.04
9.	Kotak Mahindra Bank	0.64	1.42	1.06	1.33	1.75
10.	The Federal Bank	1.31	1.94	0.60	0.83	1.89

INFERENCE:

Above table.4.2 shows the Risk rates, in Public sector bank, where Punjab National Bank gets the highest Risk rate of 5.18% for the year 2019 and SBI Bank and Canara Bank gets the lowest Risk rate of -22.76% for the year 2016. Whereas in Private sector banks, HDFC Bank gets the highest Risk rate of 2.62% for the year 2017, and Axis Bank gets the lowest Risk rate of 0.35% for the year 2017.

4.3 CORRELATION ANALYSIS

Correlation analysis has been used for studying the relationship between Risk and Return and the results are given in Table 4.3

H0: There is no significant relationship between Risk & Return

H1: There is significant relationship between Risk & Return

Table.4.3 Correlation between Risk and Return

S.No	Name of the Bank	Correlation	P Value	Significant
1.	SBI Bank	0.294	.631*	Not Significant*
2.	Canara Bank	-0.615	.270*	Not Significant*
3.	Indian Bank	0.476	.209*	Not Significant*
4.	Punjab National Bank	-0.617	.05*	Not Significant*
5.	Bank Of Baroda	-0.874	.267*	Not Significant*
6.	ICICI Bank	0.889	.043*	Significant*
7.	AXIS Bank	0.939	.018*	Significant*
8.	HDFC Bank	0.427	.473*	Not Significant*
9.	Kotak Mahindra bank	0.436	0.463*	Not Significant*
10.	Federal Bank	0.476	.463*	Not Significant*

***Significance at 0.05 level**

INFERENCE:

The above table 4.3 shows that how the banks are been correlated. Among all, AXIS bank is positively and highly correlated with the coefficient value of 0.939. Compared to all Canara(-.615), PNB(-0.617), Bank of Baroda(-0.617) are negatively correlated. It is noted that the P value is less than 0.05 for ICICI and Axis bank, hence this both banks have a significant relationship between Risk and return. Other banks doesn't have a significant relationship between risk and return as their P value is greater than 0.05.

4.4 REGRESSION ANALYSIS

Regression analysis has been used for studying the impact of Risk and Return and the results are given in Table 4.4

H0: There is no significant impact of Risk on its Return

H1: There is significant Impact of Risk on its Return

Table 4.4 Regression analysis between Risk and Return of Public and Private Sector Banks

S.NO	Name of the Bank	R Square (%)	P value	Significance
1.	SBI Bank	0.81	0.631	Not Significant
2.	Canara Bank	37.8	0.270	Not Significant
3.	Indian Bank	45.8	0.209	Not Significant
4.	Punjab National Bank	76.3	0.53	Not Significant
5.	Bank Of Baroda	38.1	0.267	Not Significant
6.	ICICI Bank	79.1	0.043	Significant
7.	AXIS Bank	88.1	0.018	Significant
8.	HDFC Bank	18.2	0.473	Not Significant
9.	Kotak Mahindra Bank	19	0.463	Not Significant
10.	The Federal Bank	22.7	0.418	Not Significant

***Significance at 0.05 level**

INFERENCE:

From the above table, only ICIC Bank And Axis Bank has a significant impact between Risk and Returns, hence Accept H0. Other banks no significant impact between Risk and returns, hence Reject H0.

V.CONCLUSION

The risk and return are the two sides of a same coin called investment. The study is based on the analysis of stocks listed on BSE BANKEX. This gives an idea to the investors to determine whether he is required to purchase the stocks on the basis of performance of the stock for a given period. A stock with higher standard deviation value is not preferred as it is exposed to higher market risk which cannot be diversified like unsystematic risk, hence such stocks are better to avoid for constructing a portfolio. This study is an attempt to evaluate the returns of banking stocks listed on BSE Bankex and to identify the best stocks to invest and the worst stocks to be ignored. If the investors are ready to take in higher risk for extra return, then the investors are suggested to invest in Public sector banks bank and where the risk is lower, the investors can invest in Private sector banks, that are giving higher returns. The investors who are looking for low risk with moderate return are suggested to invest in AXIS bank. However by constructing a portfolio the investors can minimise the risk of getting lower return. While taking decision, the investor can also consider the fundamental and technical analysis.

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